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A Proposed Town Center for Harbison, South Carolina

James Edward Simmons
Clemson University

A PROPOSED TOWN CENTER FOR HARBISON, S. C.

JAMES EDWARD SIMMONS

TERMINAL PROJECT

A PROPOSED TOWN CENTER FOR HARBISON, SOUTH CAROLINA

by

James Edward Simmons

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Approved:

[redacted]

Committee Chairman

Major Advisor

[redacted]

Head, Department of
Architectural Studies

Dean,
College of Architecture

To my parents for their love
and continual encouragement.

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INTRODUCTION

The building of cities is by far one of man's greatest accomplishments. The form of them has always been and will continue to be an indicator of the culture of the civilizations that occupy them. It is an organism that has both pleasant and unpleasant experiences. Of late, the latter seems to predominate, not from any self-inflicted wounds, but from those of the destructive instinct of man. As with any organism, there is a most vital of components, the center of life, the heart--the decay of, or lack of which life cannot exist.

The heart of the city is an urban setting for social interaction of its inhabitants. The need of a core for a city is vital, for here, more than any place else, resides the personality that distinguishes the city from another and fixes the nature of the city in the mind of the inhabitants and the visitors.

Removal of delapidated cores and construction of new ones in the fabric of existing cities is difficult, time-consuming, and expensive. Legal entanglements, antiquated laws, and lack of sufficient space for

development all contribute to this condition.

It is the intent of this Terminal Project to re-establish life, vitality, and form to the heart of the city. In doing this, as a medium for development, the New Town of Harbison, South Carolina, will be used.

THE NEW TOWN

Definition
History
Purposes and Type
Case Studies

DEFINITION

The term "new town" has become exceedingly misleading and ambiguous. Most people appear to define or describe it to suit their particular viewpoint. A definition may emphasize physical, social, environmental, legal, or even organizational factors (1). Some definitions tend to be more philosophical than descriptive, while others tend to set down precise formulae for the establishment of new towns.

To some degree, understanding the idea is obscured by the different terms used to describe new towns or developments. "New communities," "planned communities," satellite towns," "new cities," "greenbelt towns" and "garden cities are just a few of the labels given large-scale developments. Although new town is the most common term, they are all used interchangeably (2).

The following are just a few of the definitions that exist. The variety and number are indicative of the lack of a commonly accepted definition.

Ebenezer Howard, who is sometimes referred to as the father of the idea, used the term "garden city." His definition states that:

> A garden city is a town designed for healthy living and industry; of a size that makes possible the full measure of social life, but not larger; surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community (3).

Two more recent definitions of new towns exhibit greater detail and more precise requirements.

> New towns are planned communities consciously created in response to clearly stated objectives. Its creation presupposes the existence of an authoritative body or organization sufficiently effective to secure the proper site, marshall resources for its development and exercise continued control until the town reaches a viable size (4).

> By "new towns" we mean first of all towns built on a site without any urban concentrations --towns which are large enough to have an independent existence, in other words self-contained towns with commercial, educational, social and cultural institutions that satisfy all the needs of families in individuals alike...(5).

The 1964 Drafts of Bills Relating to Housing states that:

> The term new community means a locality so established and planned as to provide, on a balanced and internally cohesive basis, the housing, facilities, services and amenities suitable for appropriate living (6).

Another definition sets aside the question of a common term. Carl Feiss, in an article on "New Towns for America," concludes that:

> ...a new town or for that matter a new village or new city, is in contemporary terms, any completely designed and built new community in which are to be found all the elements of a complete urban settlement regardless of size (7).

The two most common terms are new towns and the American "new communities." The major difference between the two revolves around the "degree of self-sufficiency." A new community is much less self-sufficient than a new town.

Several other definitions exist but the ones stated above illustrate the point that no generally accepted definition has been obtained for the wide variety of new towns. "Definitions or descriptions of the physical manifestations of urbanization, in

whatever form," can only reflect a limited perception at a point in time (8).

New towns have an identifiable date of birth which may be the day of designation of a site, foundation of legal existence or initial commencement of construction (9). The "concept" of the town is formalized in a master plan prepared long before the first inhabitants arrive or the site is altered. Once construction is started, new towns are rapidly built out to achieve "critical mass" within a crucial time span. This process is in sharp contrast to the evolution of most organic or agglomerate towns which emerge from pre-urban nuclei and grow by a slow, and often disjointed process (10). The plan of the town is based on estimates of its growth potential, which permits the fixing of a "target" population (11). Such a "target" makes it possible to provide adequately for future physical and social needs, needs which depend not only on number but also on the culture

and economic development of the society which is building the town (12).

Until recently the idea of a fixed and finite size had been a major concept in the theory of city-builders. The vision of a preconceived town form represented by a "Master Plan" was rejected and replaced by a more flexible framework providing for successive stages of development. These "strategic plans" provide for alternative futures, thus allowing alternative modes of spatial development with different timetables and investment profiles (13).

HISTORY

All towns were once new towns, many whose origins predate recorded history. The new towns with which this study concerns itself occur during the closing years of the nineteenth century, the revolutionary period of new town planning.

The idea of creating a new town is not as new as it may seem. Throughout history myths of an ideal city, or an "Utopia," have always existed. Powerful religious and political leaders constructed towns merely on mystical impulse (14).

Even though towns were constructed on impulse, many had sound planning objectives, making it interesting to examine man's goals in previous civilizations.

"The exact beginning of deliberate town planning and building may never be determined" (15). The practice of town planning has been traced to the earliest urban civilization of different cultures. The archaelogical discovery of the ancient town of Kalibagan, India, shows that strict town planning existed where streets having underground drainage

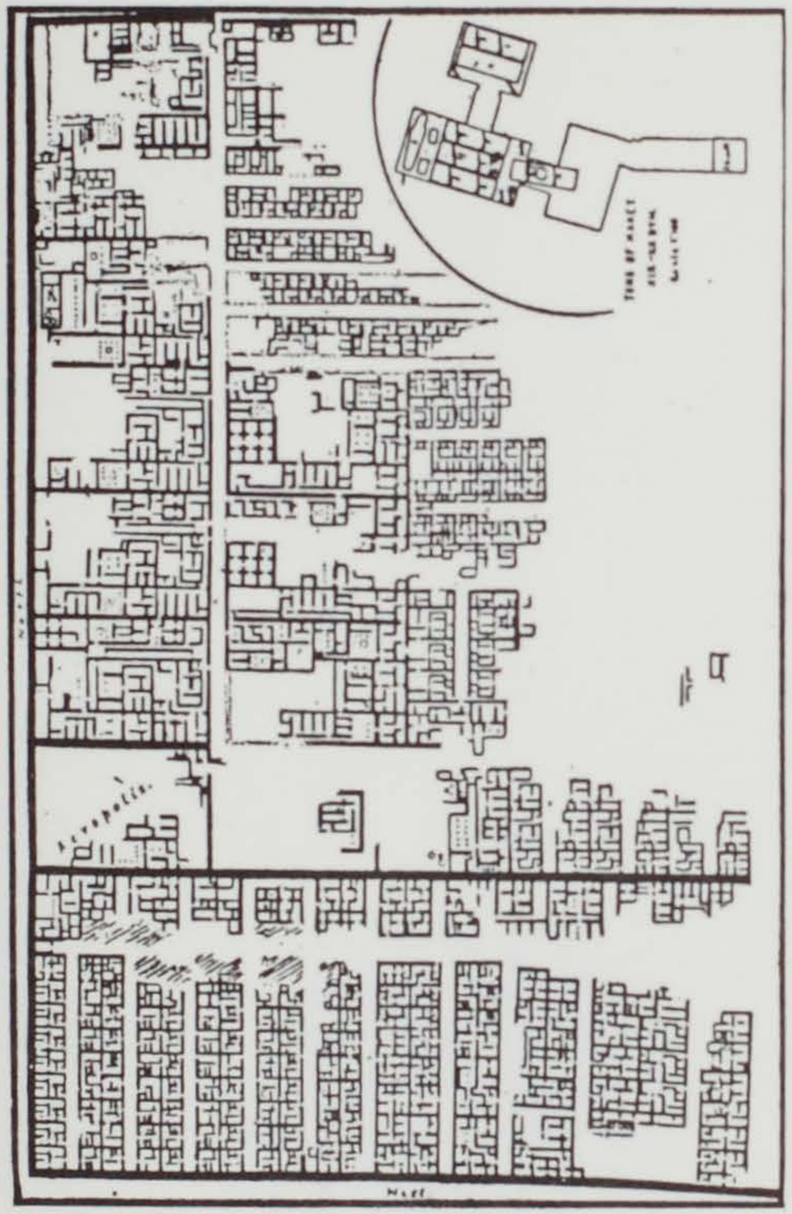


Figure 1. Kahun, Egypt.

systems criss-crossed each other in north-south and east-west directions (16).

"Evidence of town planning and building for special purposes was discovered in the small town of Kahun, Egypt" (17). It was a careful arrangement of cells in rectangular blocks deliberately laid out and built to house slaves and artisans who were constructing the pyramids. Although it was intended to be a temporary town, evidence of forethought in its layout is revealed by streets containing drains. Tel-El-Amarona, Egypt, completed about 1,000 years after Kahun, was also a "company town" erected in a similar manner to provide shelter for the tomb-builders. A rural belt similar to present day "green belts" was established around the ancient Indian city of Madura. Town building and site characterisitcs of this period show little concern for housing conditions, but high regard was given to temples, palaces, walls, and moats (18).

The first new towns founded for special purposes in Europe are reported to have been founded by the Greeks some 3,000 years ago. These settlements were founded for purposes of commerce, colonization, and absorption of population increases in the city-states. When a polis began to show signs of crowding or inefficiency from growth of its population, it was customary to dispatch about 10,000 residents to settle a politically independent new town. The initial seed population was not an arbitrary figure, but a number dictated by the limitations of food and water of the chosen site. According to Paul Spreigren, a noted new town planner, such a new town was called a "neopolis" until its growth necessitated expansion, after which, the first town was referred to as a "paleopolis" (19).

Some of the Greek new towns were situated in order to provide ports for larger cities located inland to avoid attack by sea. Pramontories provided strategic sites for these ports which facilitated defense and

One authority sums up the advancement of town planning principles up to the end of the Hellenistic period as

> ...predetermined size and design; a reasoned adaptation to the physical conditions of carefully chosen sites, clear cut form and protective enclosure; and a comprehensive and attractive communal center as the focal and general assembly point of the town. It confirmed, moreover, the age-long practice that disposed the residential quarters of cities around the public or civic organiztion.... Their later towns being well planned, self-contained, and beautifully set in country, hillside, by rivers or the sea, there was no need at all for ruralized urbanism (23).

The age of Roman power continued the town building tradition of the Hellenistic Era with the CASTRA, a military camp, that served both as settlement of new domains and for their control. Roman camp-towns were austere and lacking in aesthetic treatment. The Hippodamian grid evolved into the Roman chessboard with "circular" or blocks varying from seventy to two-hundred forty feet square which had many practical and strategic advantages. Aside from simplifying the task of survey, it was inexpensive to build and was easily policed, supervised, and defended.

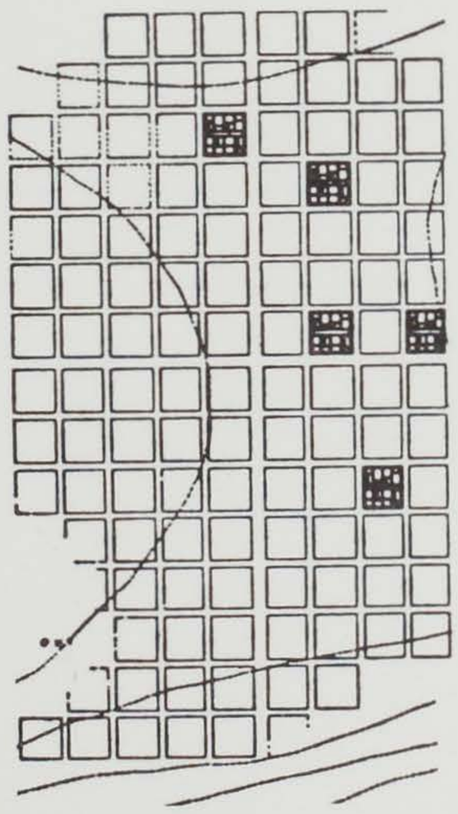


Figure 2. Grid System

escape inland, while reducing the expense of building a complete wall (20).

Hippodamus, born during the Hellenic period, may have been one of the first theorist of town planning. He was the first to advance principles regarding wide streets, better grouping of dwellings, and the location of town components around a central market place. Among his credits are the plans of the fifth century colonial towns of Piraeus, Thurii, Rhodes, Selinus and Cyrene (21).

During the Macedonian period several new towns were introduced. The most notable was Priene, which provided for a population of about 4,000 and demonstrated the influence of the Hippodamian grid system. In contrast to the purpose of the Greek new towns, those built under the influence of Alexander the Great were established for military strategy and the settlement of newly conquered territories.

> It has been estimated that nearly sixty new towns were constructed during this period, most of which have long since vanished or been built over with subsequent development (22).

Roman architect, Marcus Vitruvius Pollio, advanced several town planning principles that are still applicable today. He addressed himself to the choice of sites for different purposes, emphasized the town's needs, problems of location, and the suitability of land for different types of development. Vitruivius also reaffirmed the Greek town planning principle that the component parts of a town should be proportional to the size of its population (24).

After the Dark Ages, a period more of town destruction than town building, strong rulers emerged conquering territories and building new towns to maintain control and establish a system of commerce. Most of the new towns of this period were established around monasteries, feudal estates, and bastilles founded by the crown.

The advent of the Renaissance marked a decline in the amount of town building that took place in the Middle Ages. Attention turned mostly to the

expansion and improvement of existing urban centers, with some exceptions. Most notable of these exceptions were new developments such as Richelieu, France, and St. Petersburg, Russia, where emphasis was placed upon defensive features and remained a dominant characteristic in many towns (25).

A period of new thought and rebirth in intellectualism marked the Renaissance from the practical solutions of Scamozzio's fortifications to the philosophical approaches of Moore's Utopia. Achievements in science and exploration generated changes in social, economic, political and religious thinking. The need for expansion and escape coupled with the industrial revolution instigated a new force for urbanism (26).

Early settlements in America assumed many of the features of European communities. The gridiron pattern, the most dominant layout, the radial pattern, or the two superimposed can be seen in places like Williamsburg, Virginia; Annapolis, Maryland; Savannah,

Georgia; Philadelphia, Pennsylvania; and of most interest, Washington, D.C. (27).

What is described as the new towns movement had its beginning in the era of the industrial city near the end of the nineteenth century. This new town movement arose as a reaction of the physical, social and economic conditions of that period.

Sir Ebenezer Howard is considered by many to be the father of the new towns movement. "Disturbed by the depressing ugliness, haphazard growth and unhealthful conditions of cities," (28) Howard put forth in his book entitled Tomorrow the concept of the garden city. His idea was conceived to bring together the best elements of town and country life. A garden city can best be defined as a

> ... town designed for healthy living and industry; of a size that makes possible a full measure of social life but not larger; surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community (29).

Howard's thesis probably had more influence in new town development and city planning than any other single approach to urban problems (30).

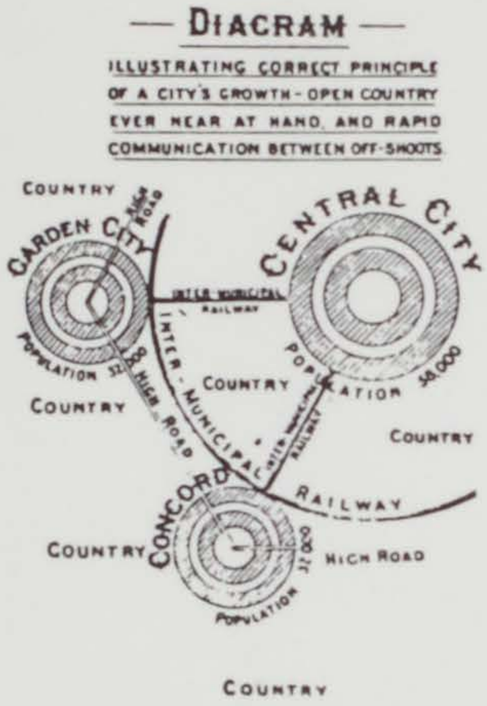


Diagram of Garden City by Ebenezer Howard, from *Garden Cities of Tomorrow.*

Figure 3. Garden City Diagram

Howard presented in his book a simple diagram of the basic concepts of his garden city idea. Many of the features are found in current new towns. Garden city was divided into six wards, or neighborhoods, which faced inward upon parks and contained a school at their center. The wards were bounded by radial boulevards and a circumferential railway. In many respects Howard's wards were the prototype of the neighborhood superblock. Industries were to be located at the periphery of the town within easy access of the neighborhoods and serviced by the circumferential railway. His thesis was physically demonstrated by the building of Welwyn and Letchworth garden cities (31).

Thus, a synthesized philosophy for the treatment of urban expansion at both the regional and local level, a formal organization for its promotion, and two cases were demonstrated. The Garden City movement had its strongest impact, as a major influence in the formulation of the United Kingdom's

new towns policy, the first comprehensive attempt to utilize the new town idea as a framework for metropolitian and regional development (32).

Several other countries have followed Britain's example and have adopted some type of new towns program: countries such as the Soviet Union, Israel, Canada, Germany, France, Australia, and the USA, to name a few (33).

New town planning in the United States has not yet attained the extensive national policy development of the European and Asian countries. Those towns founded in the United States are products of particular needs and were undertaken either by government or private enterprises. Very few have reached the scale of new towns. The most dominant purposes for their undertaking have been in connection with: wartime industry and housing (Brooklawn, N.J. and Hilton, Va.); strategic operations (Oak Ridge, Tenn. and Los Alamos, N.M.); regional resource development (Boulder City, Nevada) and particularly

under the Greenbelt Towns Act of the Resettlement Administration Experimental Projects (Greenbelt, Maryland) (34).

The Federal Government's new communities development dates back to 1966 under the Housing and Urban Development Act of 1965 from which Title X was created to provide mortgage insurance to private developers for the purchase of new land and the development of improved building sites or new communities.

Very limited activity was experienced under Title X and was superseded by Title IX, a program directed specifically toward the encouragement of large-scale new town developments. Title IV went a step further in an effort to make new community development more attractive to developers (35).

Despite Title IV reaction by the government and the public was very cautious. In the report, "The New City," new communities were recognized as an essential part of any urban growth policy.

Inspired by the conclusion of this report, Congress passed Title VII, The Urban Growth and New Community Development Act, establishing a national program for urban growth (36).

Internationally, the concept of new towns has been discussed or experimented with. In the attempts to resolve the regional problems of the city and its growth, the potential of the new town concept as a major component of national and metropolitan development is still to be fully realized.

PURPOSES AND TYPES

"New towns have been built, are being built, and are proposed to be built all over the world" (37). One of the most distinguishing characteristics of new towns is their pre-established purposes or objectives. The objectives determine the major planning characteristics, such as size, location, and land use composition (38).

New towns are intended to serve numerous functions and to demonstrate the flexibility of the concept. Listed below are six categories into which these functions are summarized:

1. to serve as capital cities;
2. to fulfill strategic or military needs;
3. to exploit natural resources or to develop the potentialities of the land;
4. to relieve congestion in existing urban areas and/or to organize more rationally existing and future metropolitan growth;
5. to cope with population growth, movements of population, or special features; and

6. to be part of a national planning policy (39).

CAPITALS

New capital cities are built for one of two reasons: the first is the creation of a new state; the second is the need to transfer government from an existing to a more advantageous location (40).

The creation of new states or colonies gaining independence requires a new capital as a symbol of identity. Geopolitical considerations often dictate the transfer of the capital to a more central location in national territory. Such a move not only establishes an equilibrium among different regions of the territory, but further aids in demographic redistribution (41).

COLONIAL TOWNS

The primary purpose of colonization is the exploitation of location-bound human and natural resources; the secondary purpose is to decongest by migration large metropolitan areas. Colonization is basically two types, external and internal.

External colonization is an effort directed by a parent state towards lands outside of its boundaries and usually involving settlement on lands of foreign population. On the other hand, internal colonization is a development policy of states with large evenly settled regions to create a balanced population distribution in order to make more efficient use of all resources within the territory (42).

Colonial towns can be grouped into five categories depending upon their origins:

1. Agro-military settlements have the function of securing a contested frontier and to signal the intention of the colonizing power to maintain a permanent presence.
2. Trade centers are usually port cities with their primary function being to maintain communication with the parent state and an import-export market.
3. Regional centers serve as markets, administrative, and service centers of an area.

4. Industrial towns are used as "growth poles," making them key elements of internal colonization.
5. New towns are a special case of internal colonization, most often located on new land (43).

DECONGESTION

Decongestion is the attempt to limit the size of the modern metropolis by assigning excess population to new communities. These policies are based upon the theory that every city has an optimum size (44).

Natural growth and migration are two sources of urban population gorwth. Unchecked growth leads to diseconomies as a result of crowding and hahazard sprawl. Solutions are offered by the following strategies:

1. the development of alternate growth regions,
2. satellite towns,
3. independent new towns, and
4. the creation of parallel or twin cities.

The new towns previously described are the three basic types of towns presently being developed. From these many varieties and special applications have developed. Each falls into one of the above categories.

COMPONENTS OF THE NEW TOWN

The phrase most often employed to describe new towns is "self-sufficient." Hidden within the interpretation of this term is a general indication of the criteria or components necessary for new town development. A self-sufficient town is a town "with commercial, educational, social, and cultural institutions that satisfy all the needs of families and individuals..." (45).

New towns should not be domitory suburbs or residential satellites for other urban centers of employment, but should provide living and working opportunities for its inhabitants (46).

New towns are composed of a variety of land uses related to the traditional functions of the city. Listed below are the four land uses generally

considered to be necessary for the composition of a "complete" new town. They are:

1. residential--from single-family detached housing through multiple housing (both rental and sales) providing for a complete life cycle;
2. institutional--with civic buildings, schools, churches, open spaces, recreational and other facilities for public and common uses;
3. commercial--from neighborhood shopping to community shopping center and possibly a regional shopping center; and
4. industrial--complementary to its region and not necessarily the exclusive or predominant economic base of the community (47).

Despite the fact that these terms connote some ideal physical composition, new towns are envisioned as multi-functional developments which provide for residential, commercial, employment, recreational, and educational facilities for their inhabitants (48).

CASE STUDIES

The case study is a very helpful tool to aid in the design process. The intent here is not to select and copy, but to analyze the successes and failures of similar problems. For the purposes of this terminal investigation, three new towns have been chosen, paying special attention to the development of their town centers. The first town was chosen because it is similar in scope and scale to Harbison. The second town was chosen for its bold expression and innovative concept. The third was chosen for its strong functional and aesthetic integrity.

NAME: TAPIOLA

LOCATION: FINLAND

DESIGNERS: ASUNTOSAATIO

TYPE: SATELLITE DEVELOPMENT CORPORATION

DATE: 1951

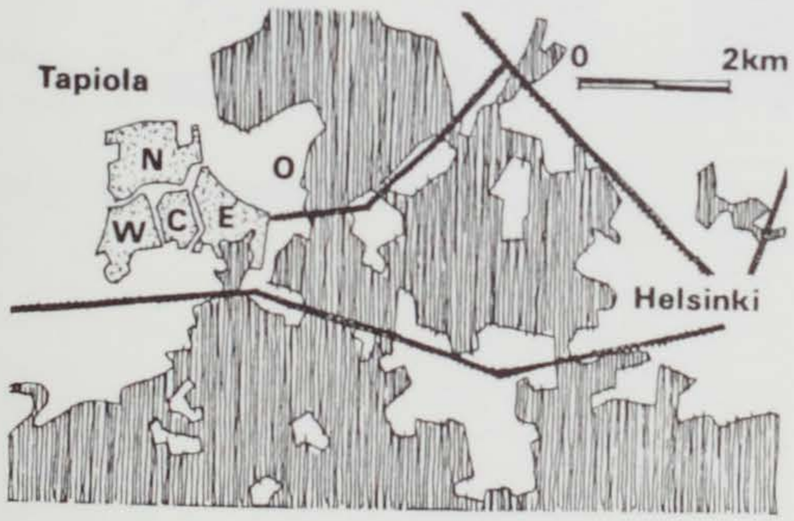


Figure 4. Map of Tapiola, Finland.

Tapiola is a new town which has the unique distinction of being created by a private nonprofit enterprise with the aim to plan a town in which different social groups could live and work in harmony. It is the result of close teamwork in the fields of architecture, sociology, civil engineering, landscape gardening, domestic science, and child welfare, that such a humanely pleasant environment is created.

Tapiola was built on a six hundred seventy acre site outside of Helsinki in then rural Epsoo County. It is one of seven satellite new towns planned to mitigate the growth and expansion of Helsinki. The town proper is planned for a population of 16,000. However, in the general plan for the district of Epsoo, Tapiola is defined as a "district center" and is to

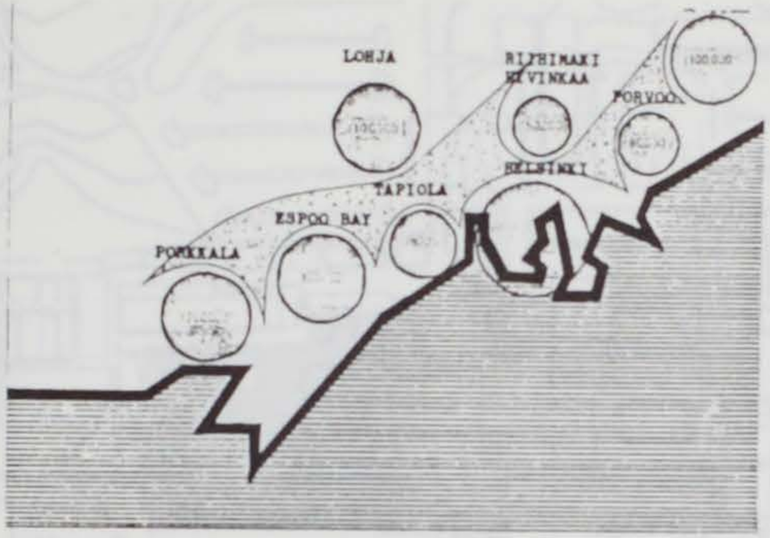


Figure 5. Satellite Cities.

serve a maximum population of about 80,000 (49).

Tapiola serves as both a model and an experiment. As an experiment, it produced much information on how to create a new town and how to make them socially and economically successful. As a model, it challenged many ideas on residential area design and Finland's urbanization patterns.

The goal in building Tapiola was to create a thriving self-contained community. One basic requirement was to have a versatile business, administrative, and cultural center, the goal of town center (50).

The competition for the design of the town center was won by Aarne Ervi and Associates. His plans included:

1. The central administrative tower ("Keskustarni"), a landmark for the city. Its amenities include a restaurant and terrace. On the top floor, a rooftop beacon of light maintains an image and identifies Tapiola at night.

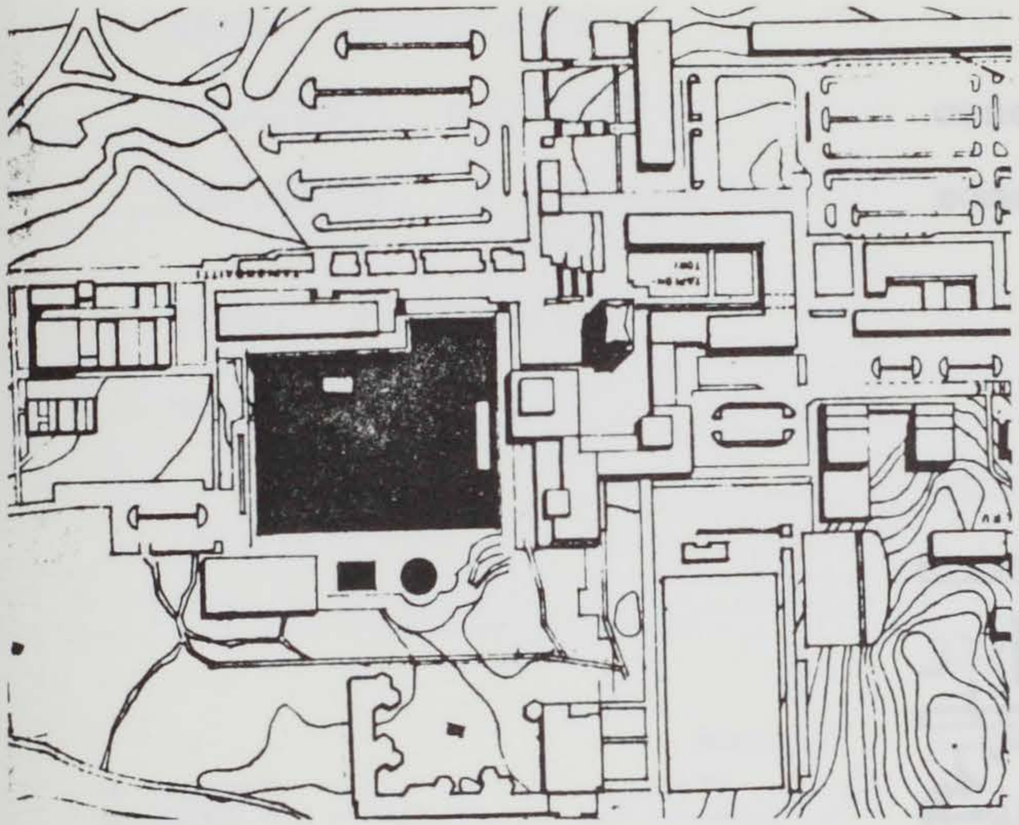


Figure 6. Town Center

2. The shopping center and "Heikintori." This is a combined department store, consisting of fifty speciality shops and a social center. It also houses high class specialty shops and services, including a tourist center and meeting hall, a spacious cafe-discotheque, premises for leisure-time activities and evening classes, restaurants, cafeterias, coffee bars, and kiosks that are open until late hours.
3. The church, with its parish hall and youth center, the swimming pool, and health center with doctors' offices, clinics and laboratories, stands alongside the artificial pool, which dominates the town center. Also included are a sports hall with a bowling alley, a physical fitness school, and a gymnasium.
4. Future plans include an exhibition hall for fine arts, an international tourist hotel, a theater and concert hall as well as a library and a college of music (51).

The number and variety of these facilities are concrete examples of the differences between a wholesomely planned community and a dormitory town.

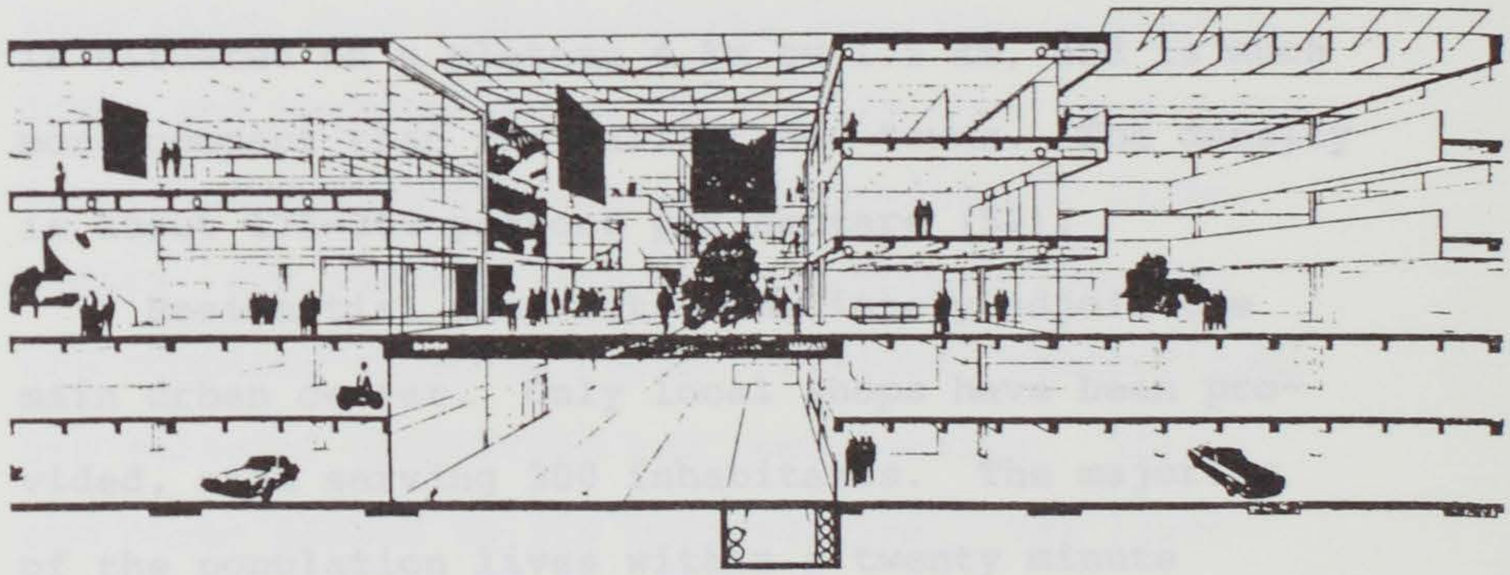


Figure 7. Section of Heinkintori.

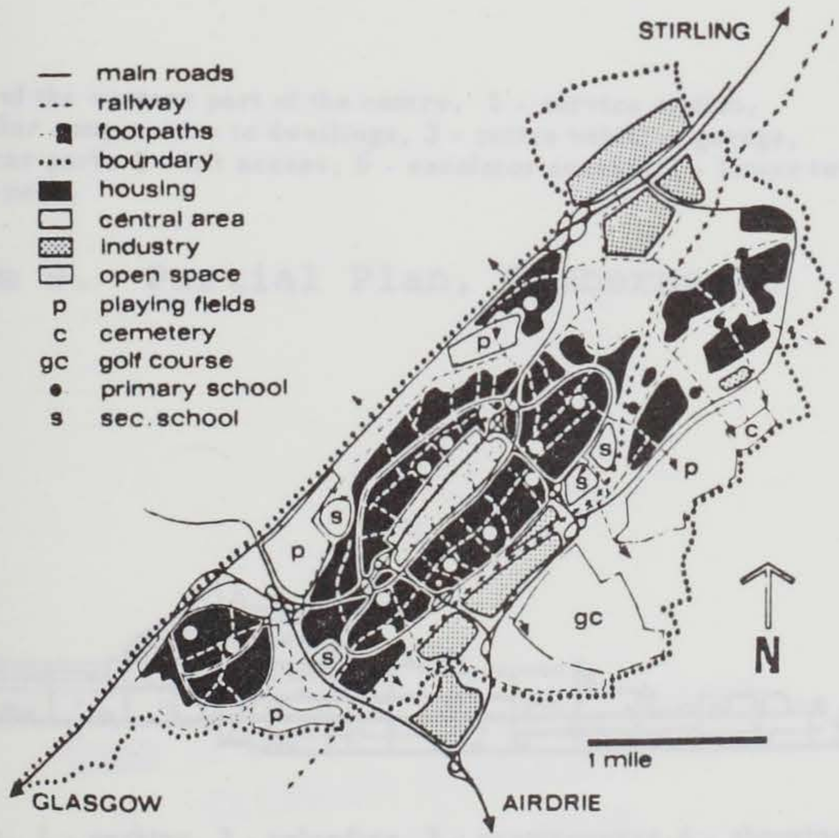
NAME: CUMBERNAULD

LOCATION: SCOTLAND

DESIGNERS: H. WILSON AND ASSOCIATES

TYPE: INDEPENDENT

DATE: 1958



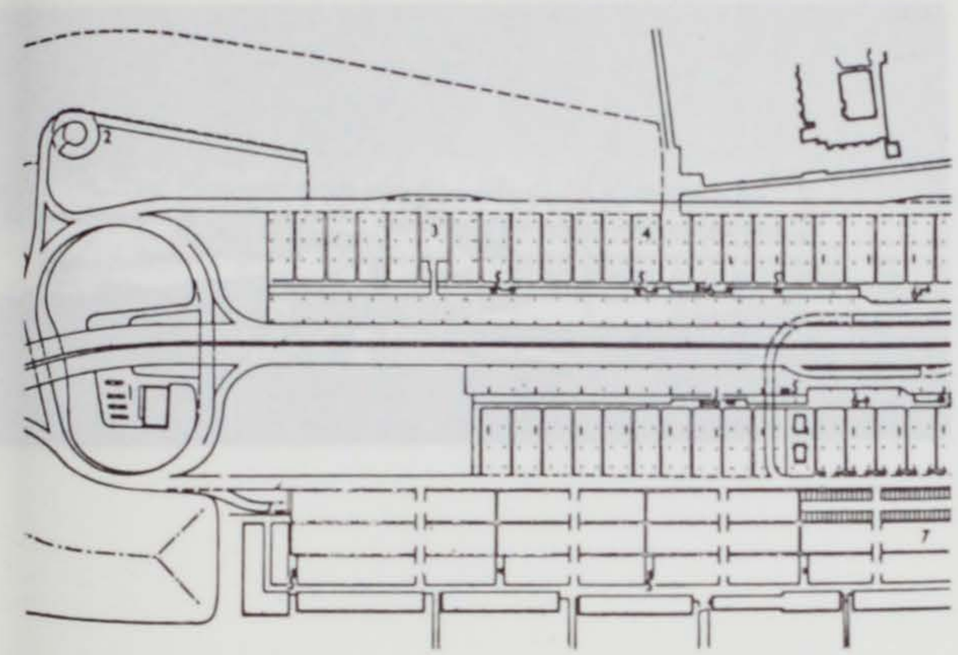
Master plan

Figure 8. Cumbernauld Master Plan.

The town is situated 70 km northeast of Glasgow with a proposed population of 70,000. Cumbernauld is situated on a plateau 4 km by 1.5 km, and is much more compact than the earlier new towns. The density is about 175-300 persons per hectare (52).

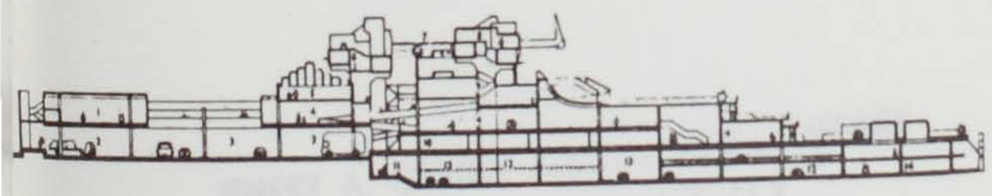
Residential districts immediately adjoin the main urban center. Only local shops have been provided, each serving 300 inhabitants. The majority of the population lives within a twenty minute walking distance from the main urban center which is a multi-story, multi-purpose building situated above the main road and includes parking for about 5,000 motor cars.

The network of streets is capable of handling the high index of cars, enabling the town to function as a regional center (53).



Plan of the western part of the centre. 1 - service station, 2 - vehicular ramp access to dwellings, 3 - police vehicles garage, 4 - hotel car park, 5 - lift access, 6 - escalator access, 7 - future two level self-park.

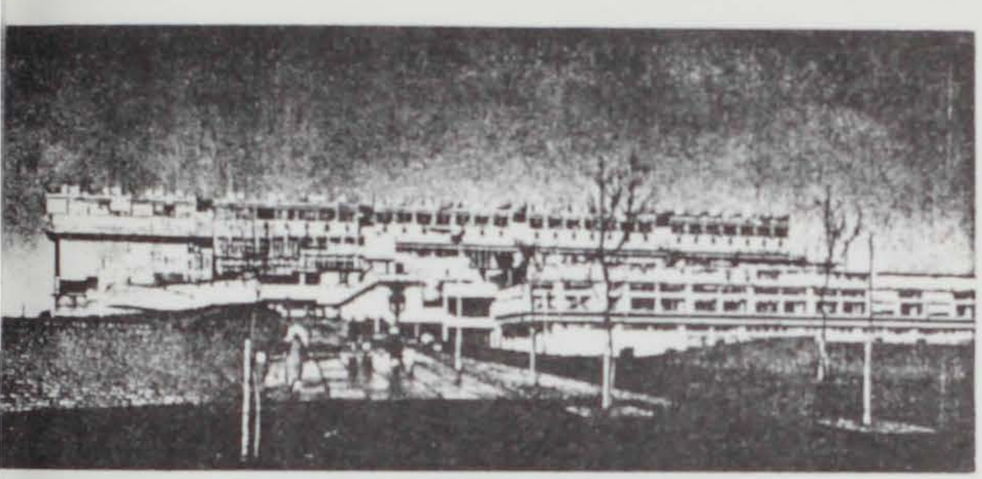
Figure 9. Partial Plan, Cumbernauld



Section. 1 - parking, 2 - unloading, 3 - carriageways, 4 - shopping, 5 - chambers, 6 - clubroom, 7 - street, 8 - penthouse, 9 - library, 10 - storage, 11 - walkways, 12 - parking, 13 - entry to parking space, 14 - offices.

Figure 10. Section, Cumbernauld

Town center for Cumbernauld is an imaginative concept. It is one building containing and performing all the functions of a town center, and the aim is to utilize almost all the lower levels that step down the southeast slope which is for vehicular traffic and includes the central spine road which runs underneath the structure's loading docks and parking areas. Above all that is a series of pedestrian decks reached by escalators, lifts, stairs, and ramps. This huge structure contains the complete shopping center, offices, recreational and cultural facilities and some housing. There are three phases to its construction. The first phase, a central spine, consists of a wide variety of shops, including a supermarket, banks, post office, offices and a hotel. On the upper floors there is a series of penthouses on the south side and a restaurant and bowling alley on the north. The second phase will extend both sides of the central spine creating a shopping mall, leading to a square around which will be grouped buildings for



recreation such as cinema, dance hall, sports center, and swimming pool. On the opposite side will be a court and police station, technical college and fire station. The third stage will add more shops and a museum (54).

Cumbernauld's town center is an excellent example of an uniformly composed center. Its location atop a hill and the height to which it rises (40 to 80 feet above ground) affords distant views to the surrounding countryside. The irregularity of its composition renders it aesthetically pleasing when viewed from sections of the city--its lines reminiscent of modern geometrical sculpture. It is both unusual and impressive while providing 750,000 cubic meters of enclosed shopping.

On the other hand, the gray concrete building, coupled with the extremely rainy climate (45 inches per annum) and contrasted against the green of the grass, is extremely cold. Void of line softening vegetation and massive in scale, the building dominates the hilltop. High winds of the valley

constantly whip around the structure. Due to climatic conditions, it is doubtful whether this massive, but conceptually impressive building is best sited (55).

Figure 11. "North-Western Town Plan".

NAME: TOWN CENTER OF THE "NORTH-WESTERN TOWN"

LOCATION: WEST GERMANY

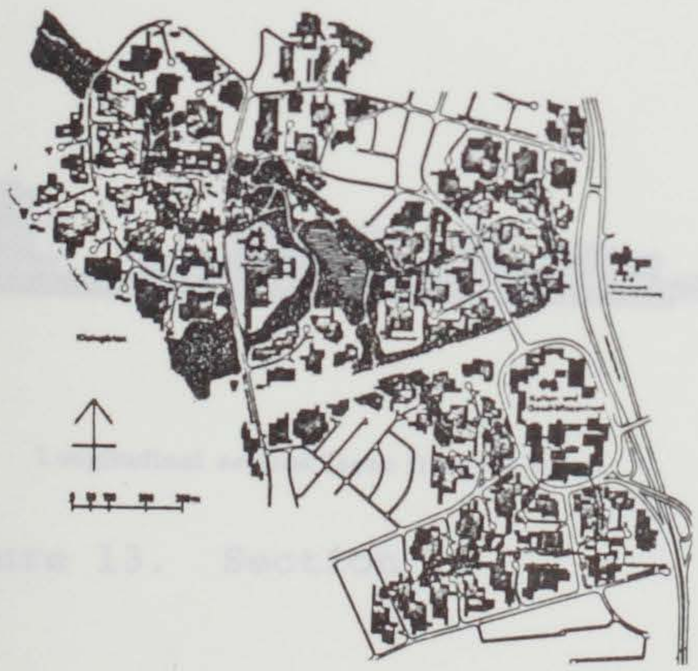
DESIGNERS: APEC, BECKERT AND BECKER

TYPE: SATELLITE SUB-CENTER

DATE: 1965-1968

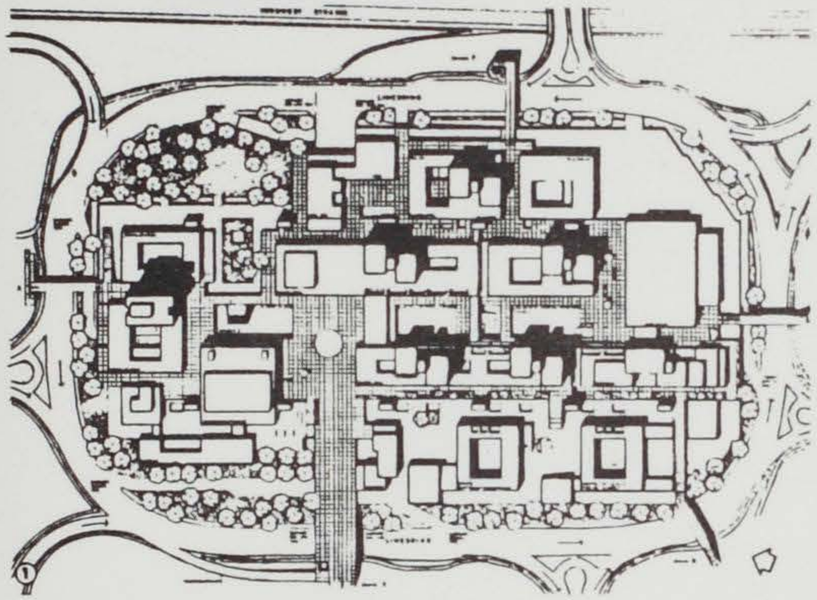
The "North-Western Town" is a new urban district of Frankfurt inhabited by about 50,000 people. Approximately 80-100 thousand people live within reach of its main center which forms an oval 360 meters long and 220 meters wide. Parking garages for 2,050 cars are located over the subway system which links the center to central Frankfurt. The third level is used for store rooms of the shops. This zone can be opened up for use by the store by removing portions of the ceiling. The top level is designated for pedestrians only and is linked to pedestrian areas by five bridges over the ring road (56).

The bridge from the west leads into the main square, or forum, of the center. A social club is located on the north side and a department store on the east side of the square. Three shopping streets



Plan. The centre of the district (cf. Chapter 4) may be seen in the south-eastern part

Figure 11. "North-Western Town Plan"



Fourth level. Pedestrian roads

Figure 12. Town Center Plan

Longitudinal section (seen from the west)

Figure 13. Section

run southward through the center which contains three department stores, a supermarket, and 70 shops (57).

North of the social club, there are an indoor swimming pool and buildings housing social welfare and health centers. The western zone includes two higher schools with student dormitories, a separate lecture hall, and a gymnasium. Provisions were made for the post office and the police and fire stations in the eastern zone. Five medium-height housing blocks are located above the shopping level (58).

This project is one of the biggest sub-centers in Europe. Its multi-functional character and program for public buildings are superior to many. The entire complex was designed by one architect's office resulting in a highly unified and consistent architectural character.

The chief problem with this center is the lack of vegetation and greenery to soften some of the harsh plazas and squares. Because of this, it is uncertain whether the inhabitants of the dwellings would have an appropriate environment.

HARBISON

INTRODUCTION

The following section provides background information to the town of Harbison. It is an attempt to relate to the reader the scale and character of the town, the comprehensiveness of its plan and the sensitivity of its layout leading up to the development of its town center.

HISTORY

Title VII of the Housing and Urban Development Act of 1970 was a landmark in establishing urban growth policy in the United States. The purpose of the Urban Growth and New Community Development Act is to encourage the orderly development of well planned, diversified, and economically sound communities.

A principal element of this policy was the encouragement of new town development which would include all of the basic activities and facilities normally associated with a city. Housing, industry, commerce, social services, education, civic, and cultural facilities, recreation, utility, open space, and transportation systems were to be integrated sensitively into a plan that was economically viable and environmentally sound. Federal loan guarantee assistance was the principal incentive to attract private developers to the program (59).

Passage of this legislation coincided with an effort undertaken by the South Carolina-Georgia Synod of the United Presbyterian Church in the United States of America. Stirred by the quest for a solution

to the social unrest of the mid-1960's, the Synod began to explore the feasibility of developing a community on church-owned land near Columbia, South Carolina. In 1968, the Synod approached the Atlanta office of HUD to undertake a study; a staff report affirmed the possibility of a new community development. Synod members then secured financial support from the Board of National Missions to underwrite the cost of feasibility studies necessary to estimate the scope and development potential. Industrial findings convinced the Board that a new community would be economically viable. The Board then conditionally agreed to sell their property (1) upon the establishment of a non-profit development corporation, and (2) when in-depth studies conclusively proved feasibility. In November, 1970, the Harbison Development Corporation was chartered as an eleemosynary corporation in South Carolina, and a consultant team of architects, planners, engineers, and economists completed the study that resulted in the sale of the church's 1,020 acres. In September, 1971, a preapplication for Title

VII loan guarantee assistance was filed by Harbison Development Corporation and subsequently approved by HUD. Operating on a loan from the Presbyterian Economic Development Corporation, Harbison completed documentation material for a final HUD application and began to consolidate the fragmented holdings of the church into a 1,734 acre tract. An interim loan secured from a local bank financed development operations until permanent financing arrangements could be completed with HUD. Although HUD issued an offer of commitment for $13 million in loan guarantee assistance in October, 1972, it was not until February, 1975, that a permanent loan was consummated. Harbison concluded a Project Agreement with HUD on February 4, 1975, establishing the basis for building a new community (60).

GOALS AND OBJECTIVES

After consummation of a Project Agreement with HUD, the Development Staff of Harbison established a set of goals and objectives which it wished to accomplish. They envisioned an enviroment that is supportive of one's choices while offering alternatives, respectful of differences, and full of opportunity for everyone, irrespective of age, race, or sex.

Harbison aspires to such an environment through the provision or creation of:

1. a wide variety and balance of housing styles and types;
2. a development pattern that reduces dependency on the automobile by concentrating activities in a Town Center which is within a reasonable walking distance;
3. a Town Center with a strong identy that includes comparison and convenience retail shops, personal services, social and health services, educational facilities, entertainment and cultural facilities and religious institutions;

4. community institutions and public spaces that enrich personal life and foster an easy interaction among residents;
5. controls and standards for land development and construction which respect and preserve the many natural amenities of the site and sensitively treat the area's land and water resources;
6. a comprehensive community social, religious, and health services system which draws upon the total resources of the community;
7. innovative physical and social delivery systems which can be tested in practice for eventual application elsewhere in the county;
8. a tax base to support facilities and services so as to have a positive fiscal impact on the respective governmental jurisdictions in Richland and Lexington Counties, South Carolina;
9. a diversity of readily accessible leisure and recreational facilities allowing opportunities

to all residents for active and passive participation; and

10. an architectural review process to assure attractive design of buildings, sensitively situated in natural settings (61).

THE PLAN

CONCEPT

Harbison is planned for over 23,000 people who will live and work in the same community. Anticipated growth will be guided by a development plan which can adjust to changing conditions. Harbison's residential, commercial, institutional, and industrial areas are conveniently linked by a highway and greenway system. Residential density increases from single-family detached homes at the perimeter of the site to town homes, garden and mid-rise apartments around the Town Center. Commercial, civic, and business activities are concentrated in Town Center which is planned to be the shopping and business center as well as the meeting place for the community.

Light industry will be developed in corridors on either side of I-26. These corridors provide interstate access for the industry and serve as a buffer between residential areas and the highway.

The road system has been designed to carry Harbison's expected traffic loads easily and

efficiently. A four-way interchange at Piney Grove Road and a two-way interchange at SC 60 currently provide access to Harbison. When traffic volumes warrant, the interchange at SC 60 is expected to be converted to a full, four-way access point. Arterial roadways are proposed to carry traffic from the interchanges to Harbison's activity areas. The internal road system's design will avoid conflicts between residential and non-residential traffic. Traffic into residential neighborhoods is discouraged.

The bicycle path system is an alternative mode of transportation. Pedestrians as well as bicyclists will be able to travel throughout Harbison without having to cross any major thoroughfare. The paths will be lighted and paved and be located within fourteen miles of greenways. The greenways, which follow the contours of the land in the stream valleys, extend through all areas of Harbison. Along the greenways are located amenities, such as tennis courts, play lots and jogging stations. Approximately 13% of Harbison has been set aside for open space. A

conscience effort will be made to preserve trees, ground cover, slopes and natural drainage. Lakes and sedimentation ponds will be developed as part of Harbison's own drainage plan.

Three neighborhood centers will be developed in conjunction with the elementary schools. The centers are planned to include lighted tennis courts, an outdoor pool and indoor/outdoor recreation facilities.

Harbison is expected to be developed over a twenty-year period. However, favorable economic circumstances could accelerate the pace of development and shorten this term.

HOUSING

Approximately 45% of Harbison is to be developed for residential use. A complete range of housing types and styles is expected to be offered. Local builders as well as multi-family developers will acquire lots and sites from the Harbison Development Corporation for construction of approximately 7,300 homes and apartments. After obtaining approval of

their plans, the builders will proceed with construction. Single-family detached homes will be compatibly priced on the same block and will have access to bike paths leading to community recreation areas. The greenway system also acts as a transition zone from the townhouse and garden apartment areas. These developments will be sold or rented to serve the Columbia market as well as the people working in Harbison. In order to provide new housing for starting families, young professionals and others with moderate incomes, approximately 20% of the homes are expected to be financed with some form of housing subsidy. Planning controls will ensure the compatibility and character of all residences.

COMMERCIAL

Harbison's Town Center is being planned for both business and pleasure. Land for its development has been designated for its location on the western and eastern side of Interstate 26. Town Center will eventually become the focal point for the town while drawing on the region as well as the residents.

INDUSTRY

Approximately 12% of Harbison is being designated for industrial and office park development firms, manufacturing companies, corporate offices and warehousing activity are some of the expected occupants of Harbison's employment areas. Over 7,000 jobs are projected to be generated on the site, which favorably compares with an estimated 7,300 resident households. Moreover, the strong industrial base will inject tax dollars into the public treasury.

INSTITUTIONS

A full complement of health, educationa, recreational, child care, library, and church facilities are being planned. Harbison planners are working with state and county agencies, as well as private providers, to prepare for the eventual arrival of approximately 23,000 residents. In health planning, efforts are being made to have primary and out-patient health care services. In education, a planning program is underway with Lexington School District Number Five to investigate the development of school/community centers which would be able to function for community as well as formal educational use. Harbison lies predominately in Lexington County School District Number Five with a very small section in Richland District One. The Harbison Development Corporation will donate land to the School District for the construction of school buildings at such time as the district is prepared to build. Recreation administrators in both Richland and Lexington Counties are cooperating with School District officials in the

planning of such centers. Since Harbison must rely on the School District to build schools, the Harbison Development Corporation is laying the foundation for planning and cooperation.

SERVICES

UTILITIES

South Carolina Electric and Gas Company will furnish electricity as well as gas if it becomes available. Southern Bell will provide telephone service. The City of Columbia will supply water and treat sewage. All utility rates are regulated by the South Carolina Public Service Commission.

POLICE AND FIRE

The Richland County Sheriff and the Lexington County Sheriff will provide police protection. Lexington County will furnish fire protection in its jurisdiction and the City of Columbia will supply service in the Richland County portion.

SURROUNDING ENVIRONMENT

CLIMATE

Mild almost snow-free winters in the Columbia area are coupled with long, moderate summers. Average growing season is 252 days with freeze-free weather normally extending from the middle of March to the latter part of November. The average annual temperature is 64 degrees and varies from an average of 80.8 degrees in July to an average of 46.8 in January. Annual rainfall is 47 inches, and annual snowfall is about 2 inches.

GOVERNMENT

The City of Columbia and Lexington County both have a Council-Manager form of government. Richland County has a County Administrator form of government.

ARTS

Columbia has its own museum of art and science, symphony orchestra, and ballet company. Town Theater and Workshop Theater produce a wide variety of plays as do the drama departments of the University of South Carolina and Columbia College. The Columbia

Music Festival Association sponsors an annual concert season featuring major orchestras, chamber groups, opera and ballet companies, sponsor live performances by name entertainers throughout the year at the modern Carolina Coliseum. A new state museum and state performing arts center have been proposed for Columbia.

Richland and Lexington County each has a library system which is served by the State Library in Columbia. The Riverbanks Zoological Park includes two botanical gardens, a National Historic Register Site, an outdoor recreation facility and zoo.

UNIVERSITIES

There are six institutions of higher learning in the area, including the University of South Carolina, Allen University, Benedict College, Columbia College and the Lutheran Theological Seminary. Midlands Technical College offers a two-year degree program and post-secondary, technical career education.

RECREATION

Lake Murray, located 4 miles west of Harbison, has fishing, boating. and camping facilities. Sesquicentennial State Park, located 15 miles southeast of Harbison on US Highway 1, offers swimming, fishing, picnic areas and camp grounds. In South Carolina there are 33 state parks located on seaside beaches, lakes and in the Blue Ridge Mountains. Myrtle Beach, Hilton Head Island, and historically rich Charleston offer some of the best vacation resorts in North America.

TRANSPORTATION

Rail passenger service is provided in Columbia by Amtrack. Freight service is provided by Seaboard Coast Line and Southern Railway System. Interstate motor freight service is available from 44 carriers; 36 of which have terminals in the Columbia metropolitan area. Ocean going freight can be shipped from the Dock of Charleston.

The Columbia Metropolitan Airport, 6 miles southwest of the capital, offers regularly scheduled

Figure 14. National Locator

Figure 15. Regional

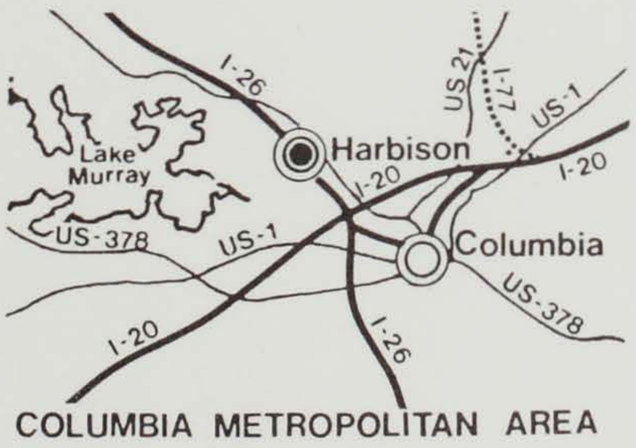


Figure 16. Area

commercial jet service through Delta, Eastern, Piedmont, and Southern Airlines. Owens Field, a private airport, has two paved and lighted runways of 3,456 and 3,697 feet for small aircraft use.

Figure 17. Harbison Master Plan

TOWN CENTER

Introduction
Definition
History
Problem Statement
Site Study
Proposal

INTRODUCTION

This ensuing section defines town center and its functional relationship to a supporting town. Some historical background will also be given to show its evolution and present purpose. Following this will be the problem statement, definition, and finally a design solution.

DEFINITION

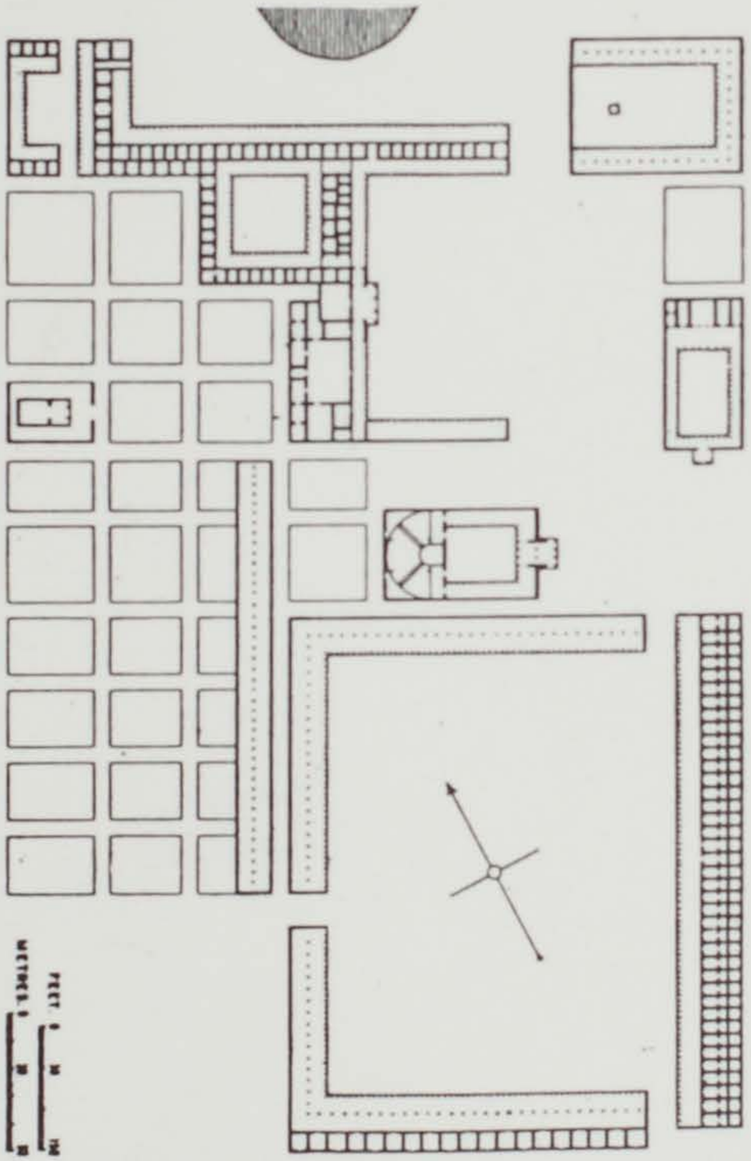
Town center is defined as the chief administrative, business, entertainment, and cultural center of a town (62).

As an administrative center it is the meeting place of city offices and work place of local government. All of these purposes require a building and a civic image.

As a business center it is a place of commercial and professional firms who merchandise both goods and services.

As an entertainment and cultural center, it is the place where the inhabitants go to see the latest film, listen to serious music, to visit exhibitions of art, to read, to dance, or to eat good food. It is a place where different groups with a particular interest meet to pursue it. Buildings appropriate to an area of this type are: theaters, cinemas, and concert halls; museums, art galleries, and libraries; restaurants, bars, cafes, and any place of public assembly (63).

HISTORY



MILETUS—AGORA AREA, *c.* MID-2ND CENT. B.C.

Figure 18. Agora

The ancestral predecessor to the town center is the Greek agora. The separation of the agora from the temple precinct sparked its rise as a market place. Its most important function was that of a communal meeting place and not as a market (64).

The most primitive societies met together in time of common difficulties such as fear, suspicion, or social instability. A place for such functions as community dances or games had long existed in the village. All these functions of the agora passed into the city to assume a variety of forms in the urban pattern. Probably no market place exists where the interchange of news is not as important as the interchange of goods (65).

The early agora had an irregular form existing as an open square or simply an extra wide street. It is primarily an open space publicly owned and publicly occupied (66).

After the introduction of stamped silver and gold as a medium of exchange, commerce became an important element in the city's life.

The function of the agora gradually changed from a meeting place to a place of commercial activity. Later editions were enlarged to accommodate the other functions cramped by the increased activity as a market place. The agora, in time, became an indiscriminate container very similar to the Roman forum (67). Social functions of the open place survived in the Latin countries: plaza, campo, piagga, descend directly from the agora. It was in those open places with surrounding cafes and restaurants that spontaneous meetings, conversations, encounters, and flirtations took place. The sports event of the agora did not entirely disappear. Knightly tournaments, military parades and horse races are still held in some European towns. Since the agora combined so many urban functions--law, government, commerce, industry, religion, and socialibility, it became the most vital and distinctive element of the city (68).

After the mid-twentieth century introduction of impersonal supermarkets in the United States, the

function of a market as a center of personal transaction and social entertainment were entirely lost (69). Since then a renewed interest has been spawned in the original concept of a town center.

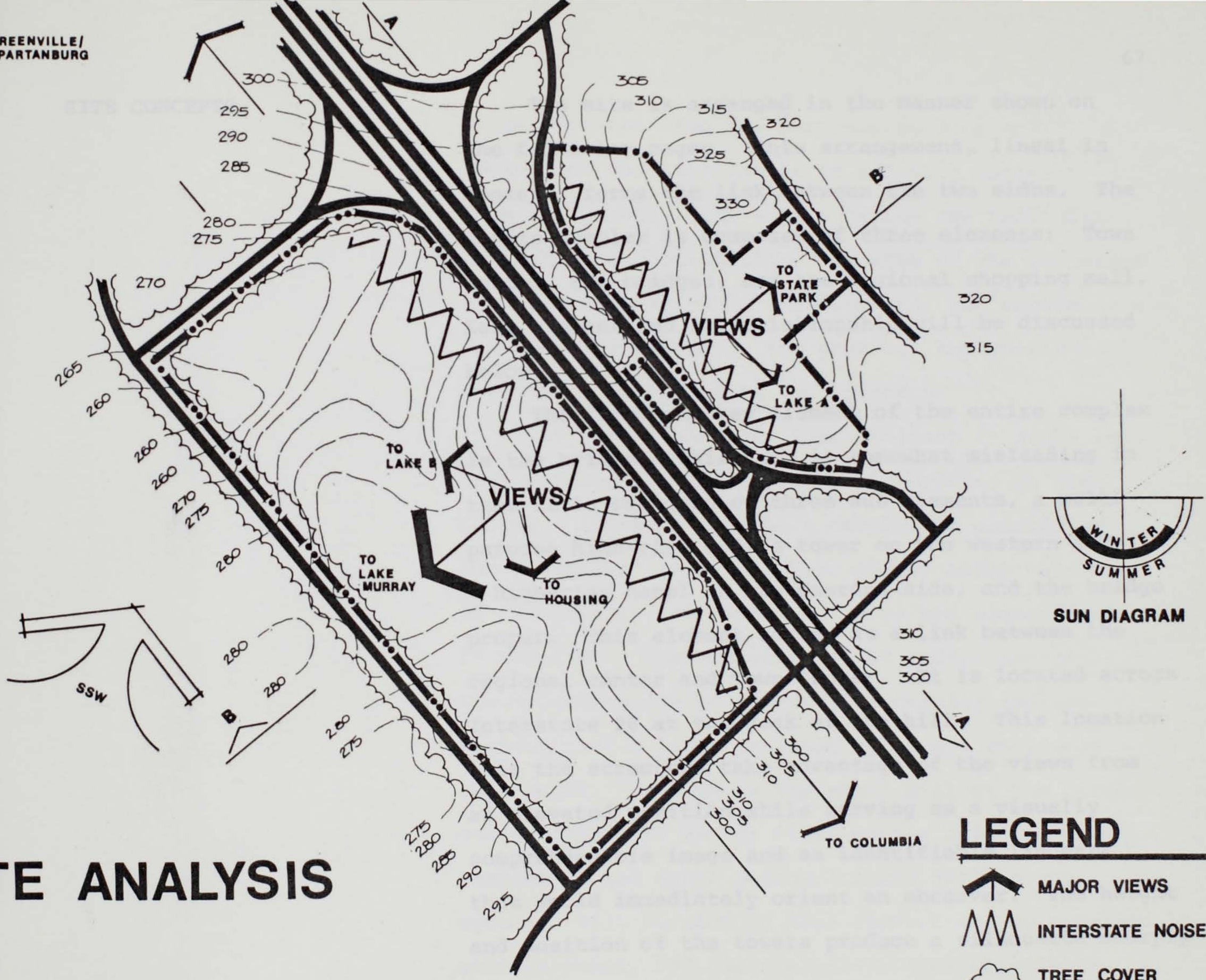
PROBLEM STATEMENT

The intent of this terminal project is to lay out and schematically design a proposal for the town center of Harbison, South Carolina, as conceived by its developers.

The town center must serve the business, cultural, and commercial needs of the town while also functioning as an image. Emphasis will be placed on the development of a compatible town form, an expandable and flexible building system, center of activity and architectural unity.

SITE ANALYSIS

The site for Town Center is located at the center of Harbison and affords easy access from the highway and the residential areas. It is cut into two portions, the eastern side (16.0 acres) and the western side (64.0 acres) by Interstate 26. It is situated along the top of a ridge that slopes perpendicularly to the Interstate. Along an axis whose topographical elevations run from a site-high of 335 feet above sea level on the eastern side to 290 feet above sea level on the western side. At a right angle to this axis and parallel to Interstate 26, the eastern and western sides slope 3.5% and 5.0%, respectively, to the north and 3.5% on each side to the south. A thick growth of 4 to 30" diameter Southern Pine and hardwood cover the entire site. The hilltop location offers views to the surrounding area with even farther sites such as the state capital, perceptible at greater heights.



SUN DIAGRAM

SITE ANALYSIS

LEGEND

- MAJOR VIEWS
- INTERSTATE NOISE
- TREE COVER
- PREVAILING WIND

SITE CONCEPTS

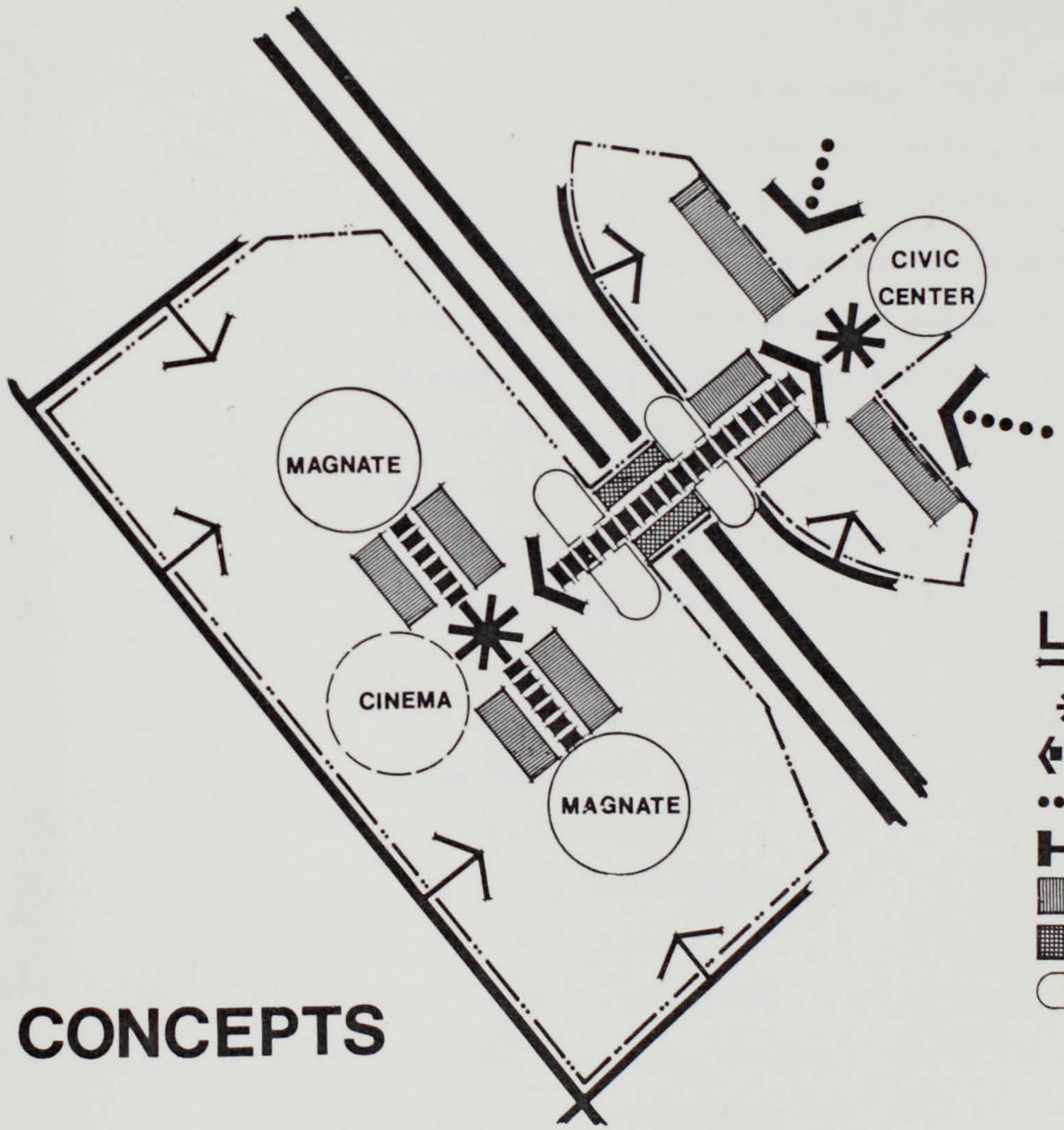
The site is arranged in the manner shown on the following pages. This arrangement, lineal in concept, forms the link between the two sides. The entire complex is composed of three elements: Town Center, the bridges, and the regional shopping mall. Each element and its relationship will be discussed below.

The first and key element of the entire complex is the bridge. This term is somewhat misleading in that it is composed of three sub-elements, a multi-purpose high-rise office tower on the western side, a high-rise hotel on the eastern side, and the bridge proper. This element serves as a link between the regional center and Town Center. It is located across Interstate 26 at the peak of the hill. This location lets the structure take advantage of the views from an elevated position while serving as a visually comprehensible image and an identifiable landmark that would immediately orient an observer. The height and position of the towers produce a silhouette sharply

differentiated from the surrounding area and identifies the location as an activity center. From the highway, the towers define the vehicular path and its continuation, the edge of the two sides of the site, and their relationship, and serves as a simultaneous climax to the physical and emotional experience of ascension and approach.

The second element, less dominant in scale and overshadowed in importance by the bridge, is Town Center. Although the whole complex is considered the "downtown" area, and Town Center being only one of two equally active nodes, it is the symbolic heart of the town. The intersection of pedestrian paths, the concentration of commercial activity and the incidence of a large enclosed space all reinforce this point. Located on the small hill at the north end of this site is the civic center building which terminates the axial procession and defines the square. Also located in this element are commercial, entertainment, and cultural facilities along with some residential quarters above the wings.

The third element and most important economically is the regional shopping mall of the western side. It is scheduled for development in the first phase and will be instrumental in establishing the regional attraction of the entire complex. This building contains numerous commercial facilities and the second activity node which terminates the link on this side. The building is situated in such a manner as to facilitate ease of access from all sides and to take advantage of the mild topographical change.



LEGEND

- ACTIVITY NODE
- SHOPPING LINK
- PEDESTRIAN ACCESS
- AUTO ACCESS
- COMMERCIAL
- BRIDGE
- TOWERS

DESIGN CONCEPTS

PROPOSAL

CONCEPT

The concept for the center is to connect the two divided sides of the site with a shopping bridge. At each end of this there will activity nodes to maintain the flow of shoppers back and forth. The entire center is of mixed-use character, creating a mixture of commercial, business and leisure time activities along a linear access. This is a continuous path that has been manipulated to provide a sequential arrangement of interconnected spaces varying from small intimate piazzettas to larger urban plazas.

COMPONENTS

Listed below are the three main components of Town Center and the functions they contain.

- Town Center
  - Civic Building
  - Library
  - Auditorium
  - Public Offices
  - Restaurants and Cafes
  - Bars and Discotheques
  - Cinema

Theater

Offices

Shops

Convenience Stores

Crafts

- Bridge

High-rise Hotel

Shops

High-rise Office Tower

- Shopping Center

Department Stores

Cinemas

Shops

Restaurants

Ice Rink

TOWN CENTER

According to Gibberd, shopping can be divided into three general categories:

Demand

Convenience

Impulse

All three of these types have been reflected in the layout of the Town Center.

Demand shopping is for items pre-chosen and the only need is to buy it. Convenience shopping is for personal needs for maintenance or care of the bodily functions. Impulse shopping is for luxury goods that are usually sold by display windows within the store.

Town Center is a four-level structure containing: parking garages on the two lowest levels, entertainment, convenience and service facilities on the ground level, and business facilities on the upper plaza level. It is designed on a 30' x 30' module to facilitate versatility, change and expansion.

Another portion of the center is the wings. These appendages extend along the edge of the site forming an urban street along with the high-density housing units. They contain apartments and shops whose location out of the main structure best fit their operation. The entry to Town Center is a 30' opening, giving access both from the lower level

parking and the residential areas. To avoid confusion to the user unfamiliar with the center, the entry is divided into a set of 20' wide stairs that provide access from ground level parking areas to the upper plaza level and a 10' wide bridge that defines both the semi-private street and its entry into the main plaza. There are shops along the wing which are extroverted in nature, opening onto the parking area. Service is from the service corridor at the rear of the shops.

The ground level has five different components, two extroverted and the other three introverted. The extroverted spaces are small plazaas that open on the parking areas for easy, quick access. Each acts as a market place for the grouping of convenience shops and craft shops. The introverted spaces all open to the upper plaza and have vertical access. These are the smaller and more intimate spaces placed away from the main stream of traffic. Around these spaces are located the entertainment facilities and shopping facilities.

The main plaza is divided into four distinct zones: a fully enclosed civic plaza surrounded by shops, cafes, and the civic building containing the library and auditorium; the minor plaza of the theater, cinema and hotel; their link with shops along each side; and the small court which is shared with the lower level.

The upper levels are flexible and contain commercial office spaces.

The urban spaces and establishments reflect the spirit of a town. The spaces and plazas within Town Center are grouped into a series of out-of-door rooms containing fountains, sitting areas, out-of-doors cafes and green areas. They are designed as a sequence of spaces relative to the person moving through and are furnished with people-oriented, functional amenities: trees for shade and scale, arcades for cover, seats to relax, and fountains for animation.

BRIDGE

The bridge section, as noted earlier, contains three elements, the two towers and the bridge.

The first tower encountered is the 16-story hotel. It contains service facilities on the ground level for easy access to the main lobby at plaza level, entertainment facilities at the next level, a rooftop pool and observatory along with the rooms. Emergency exists and service to the plaza are contained in the vertical end shafts. The bridge contains small shops and provides the link to the other side. On this side is located the high-rise office tower and its 4-story base structure. The tower contains office space while the base structure provides three levels of commercial space and more office space around a large sky-lit atrium space. Parking is subgrade on two levels.

REGIONAL CENTER

The Regional Center is the third and final element of Town Center. Its central space is the activity node for the western side.

The building is actually a two-level bridge between the core section and the magnates which are four levels. The entire project contains approximately 550,000 square feet of comparison shopping. Access to the main level is from the northern parking lots at entrances in each minor court and the major court. Access and sheltered parking are provided by the bridge sections of the building. Access from these areas are either into the lower entertainment level for escalator access to the central court or to the opposite ends for elevator access to each minor court. Both magnates can be entered from this level also. The upper level provides access at the core to the office tower and its facilities. The entire building is a special adaptation to make the best use of the site topography.

CONCLUSION

Each element of Town Center was designed as an individual section with the same goals applied to them that were applied to the center as a whole. Both the Town Center and the Regional Center could be built individually and function normally, but The Bridge, because of its special function, could not be built alone. The office tower or hotel sections could survive if they were built in combination with one of the other parts.

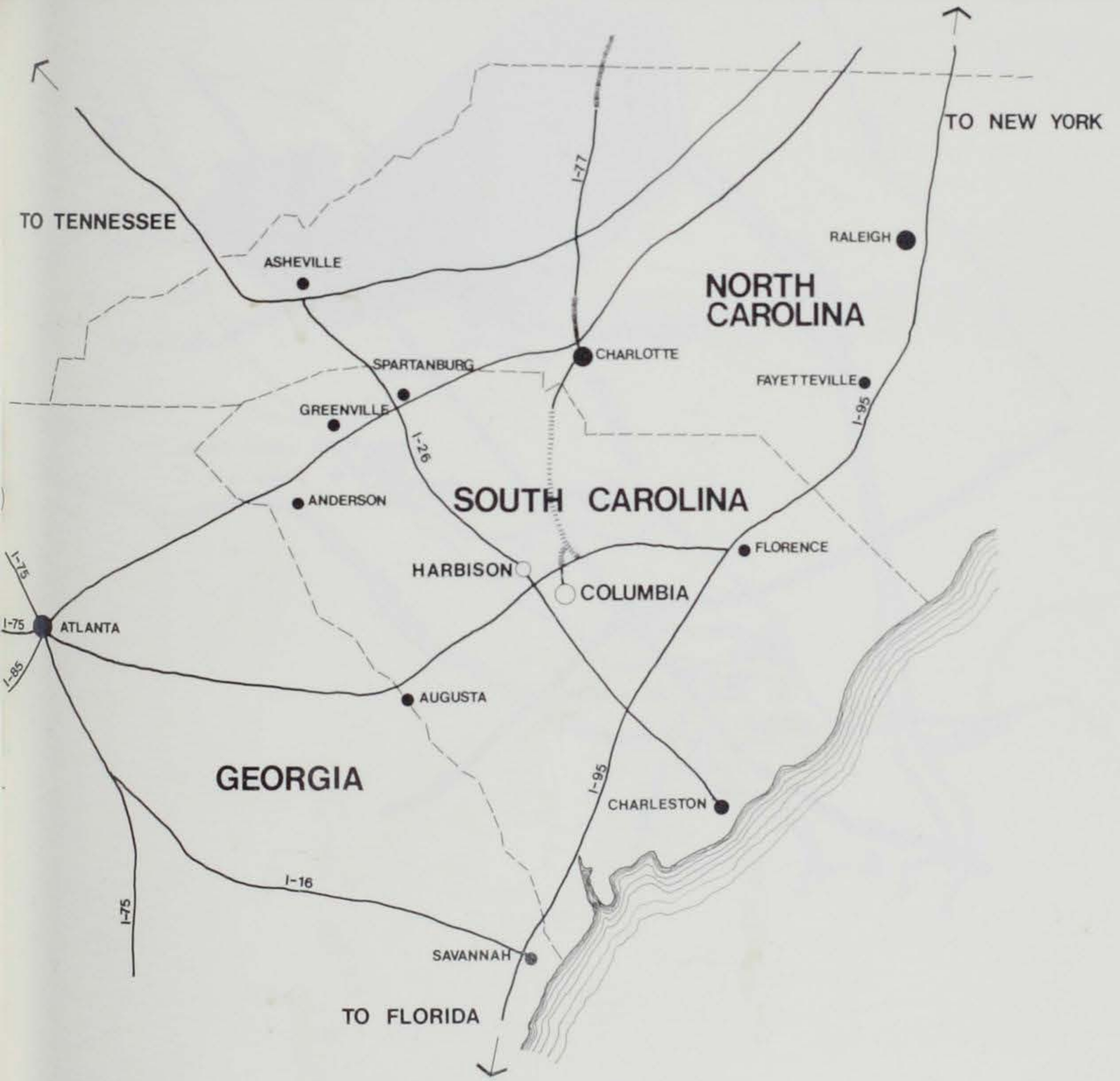
As seen, the goal was to re-establish the pedestrian as the primary user of a Town Center and not automobiles. The solution that follows is a variety of interpretations of the mall concept, be it introverted, extroverted, indoor or out-of-doors. It contains a little of all.

A PROPOSED TOWN CENTER FOR HARBISON, SOUTH CAROLINA

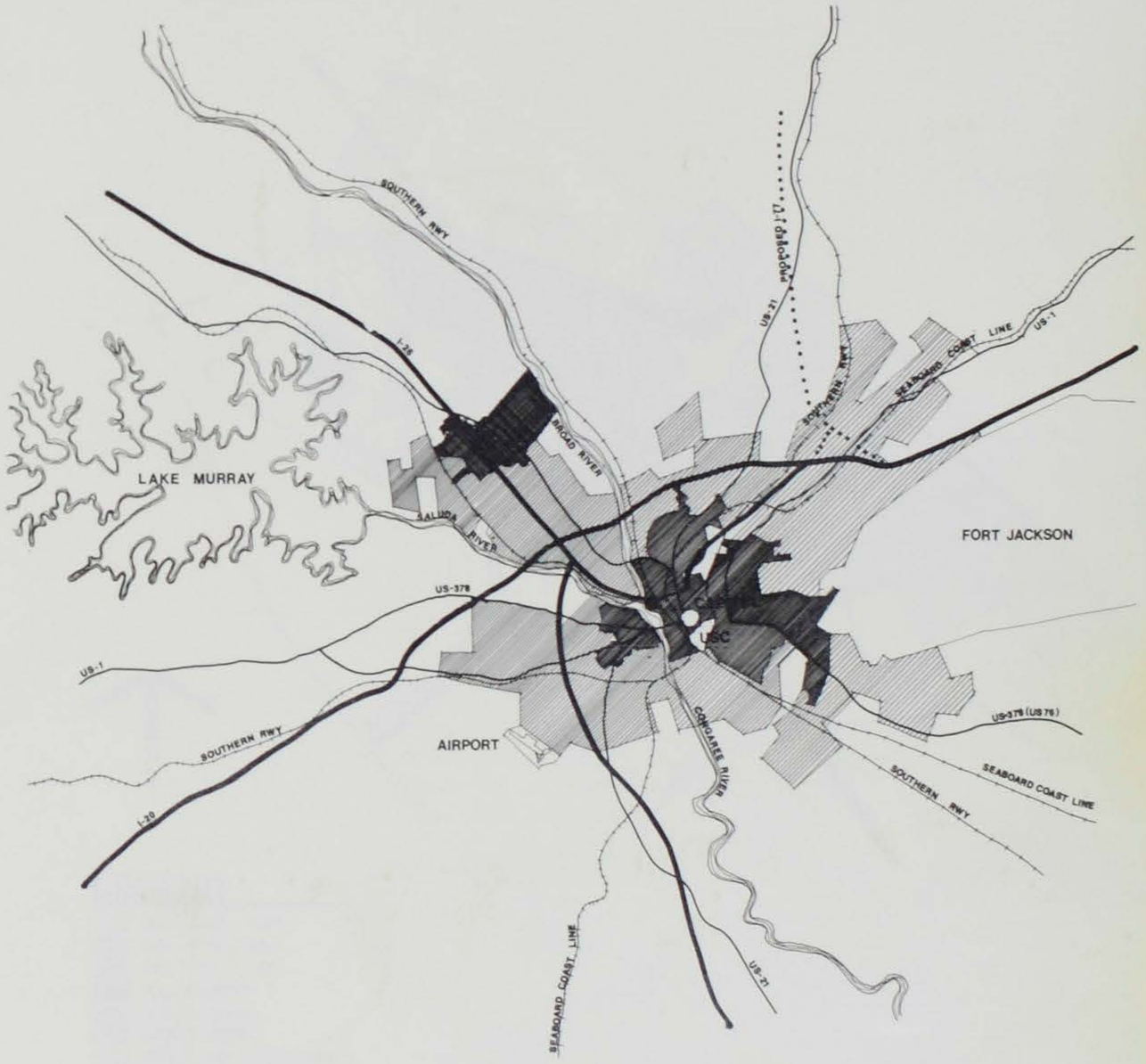
VISUAL PRESENTATION

A PROPOSED TOWN CENTER FOR HARBISON, SOUTH CAROLINA

JAMES E. SIMMONS
TERMINAL PROJECT
SPRING SEMESTER '76



REGIONAL AREA



COLUMBIA METROPOLITAN AREA

LOCATION MAPS

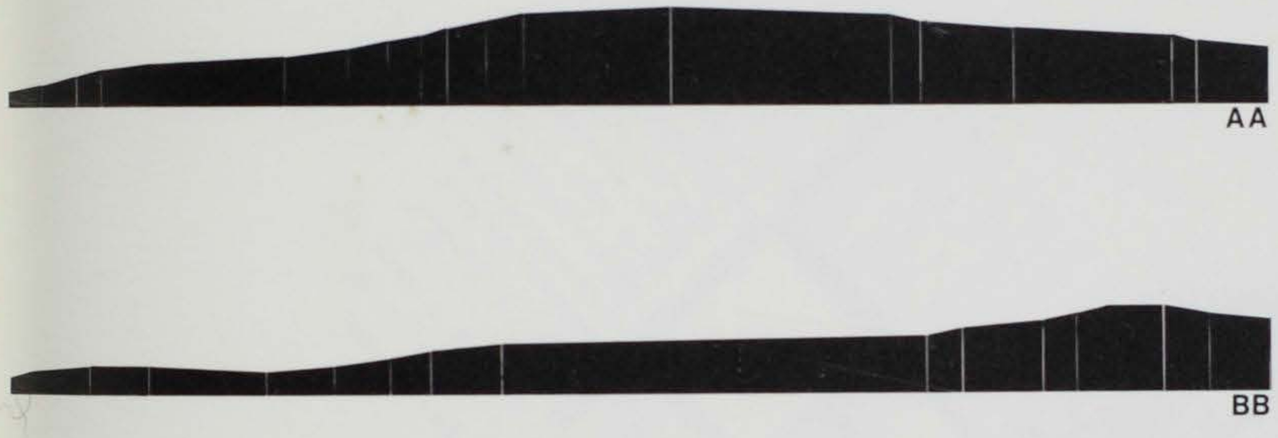
DUTCH FORK

LEGEND

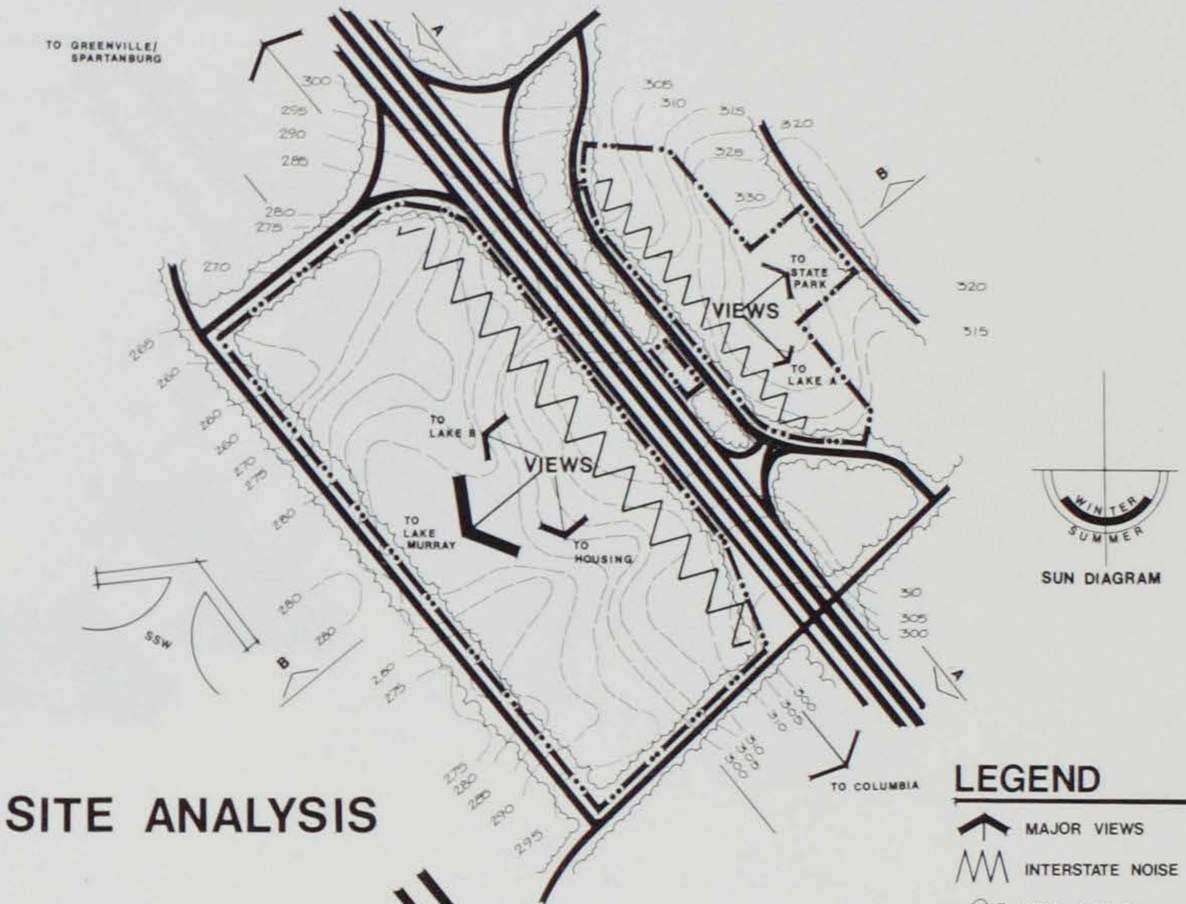
- RES. 3-4.5 DU/A
- RES. 12-18 DU/A
- RES. 25 DU/A
- TOWN CENTER
- INSTITUTIONAL
- EMPLOYMENT
- PARKS AND GREENWAYS
- SCHOOLS
- RESERVE
- UNACQUIRED

HARBISON

AREA LOCATOR / LAND USE PLAN



SITE SECTIONS



SITE ANALYSIS

SUN DIAGRAM

LEGEND

- MAJOR VIEWS
- INTERSTATE NOISE
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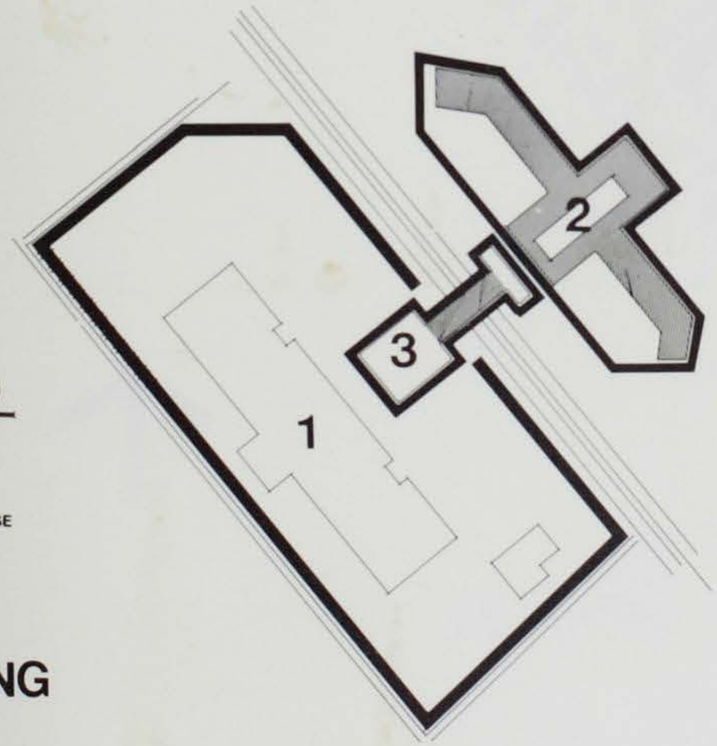
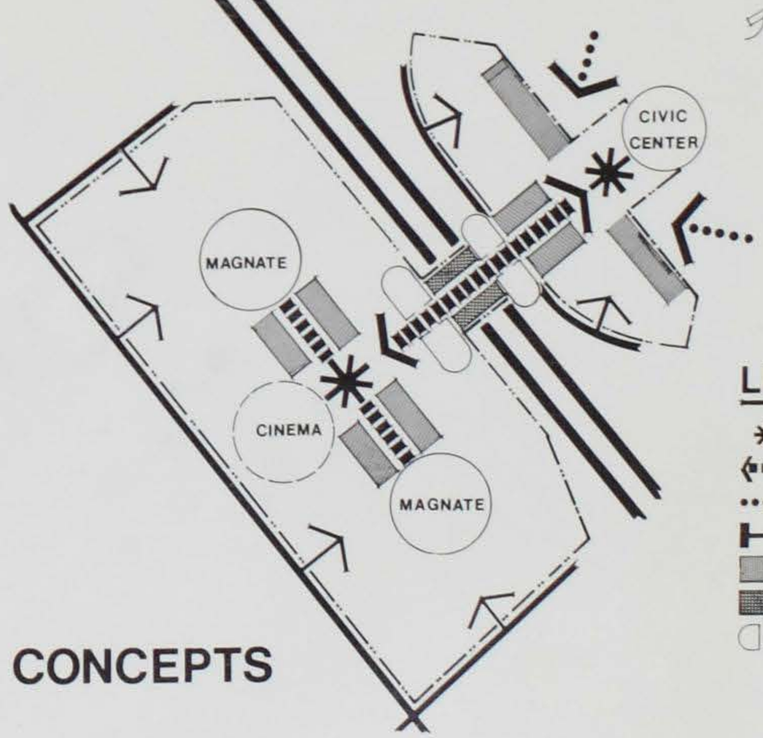
- PREVAILING WIND



LEGEND

- 1 PHASE 1
- 2 PHASE 2
- 3 PHASE 3
- TWO-PHASE

PHASING



LEGEND

- ACTIVITY NODE
- SHOPPING LINK
- PEDESTRIAN ACCESS
- AUTO ACCESS
- COMMERCIAL
- BRIDGE
- TOWERS

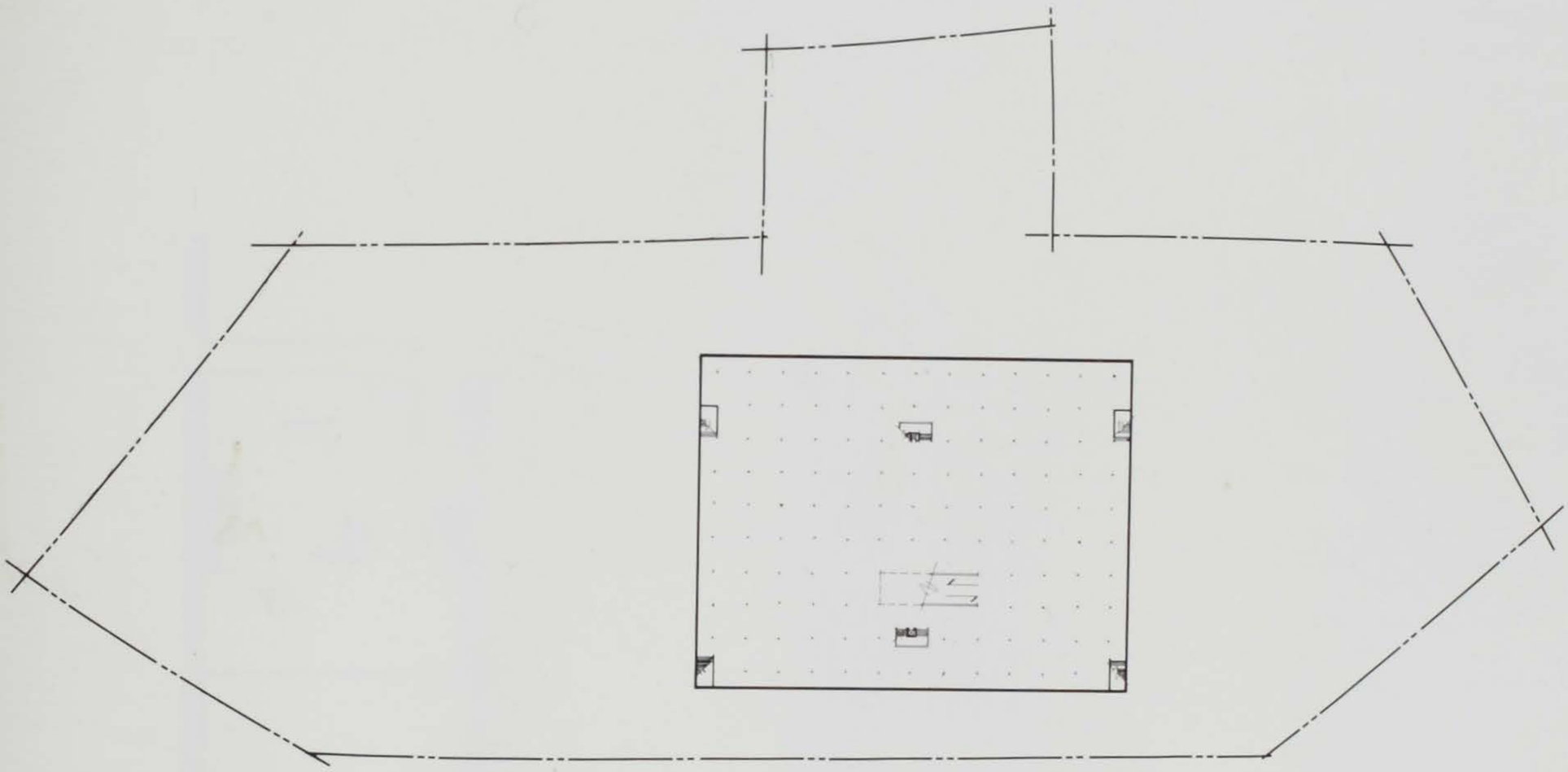
DESIGN CONCEPTS

TOWN CENTER SITE STUDIES

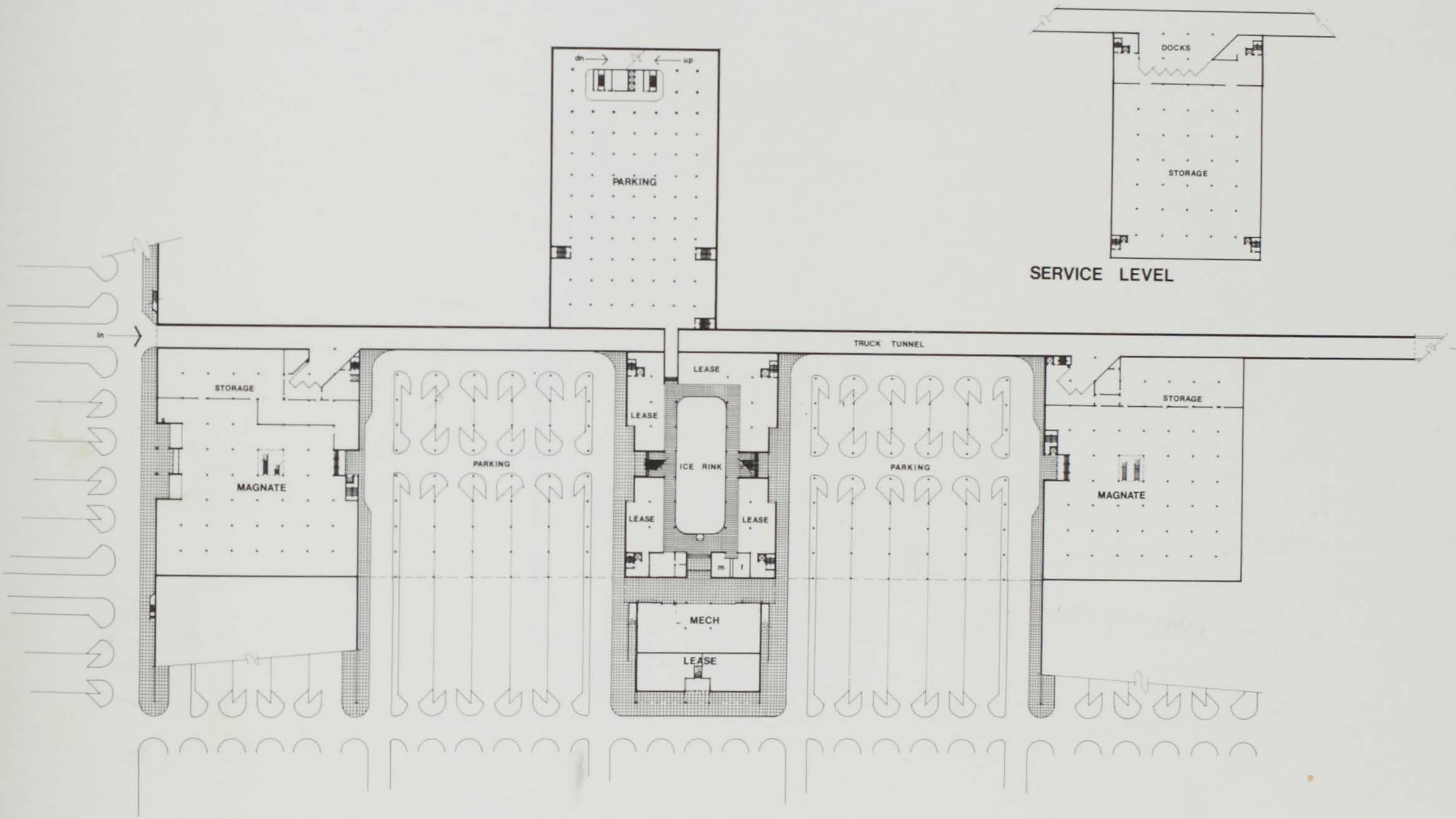
SITE PLAN

0 50 200
25 100 300

4

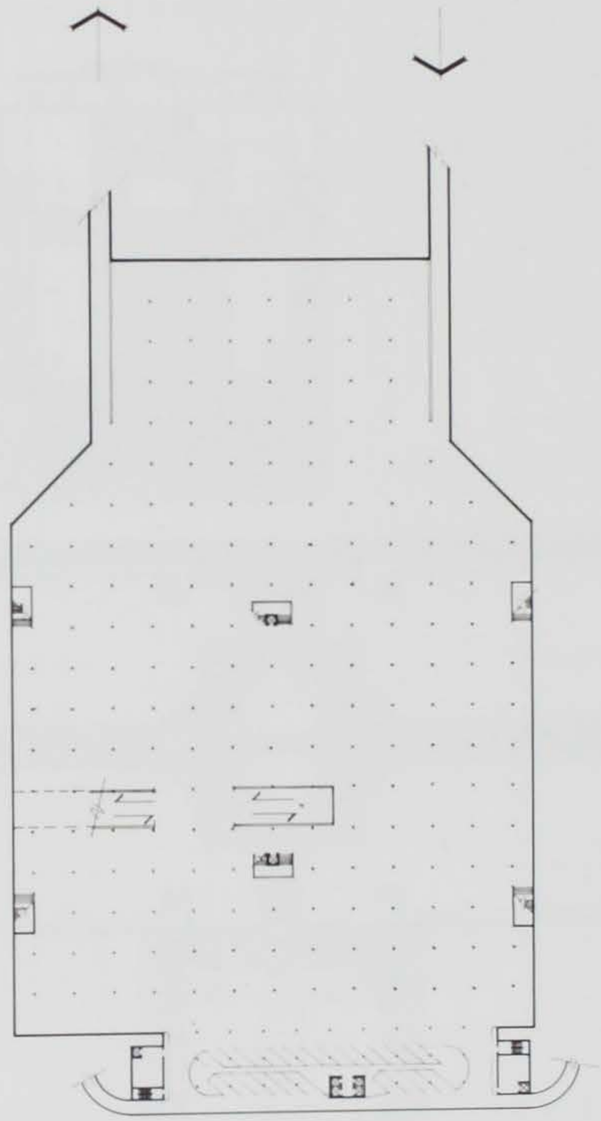


LOWER LEVEL PARKING



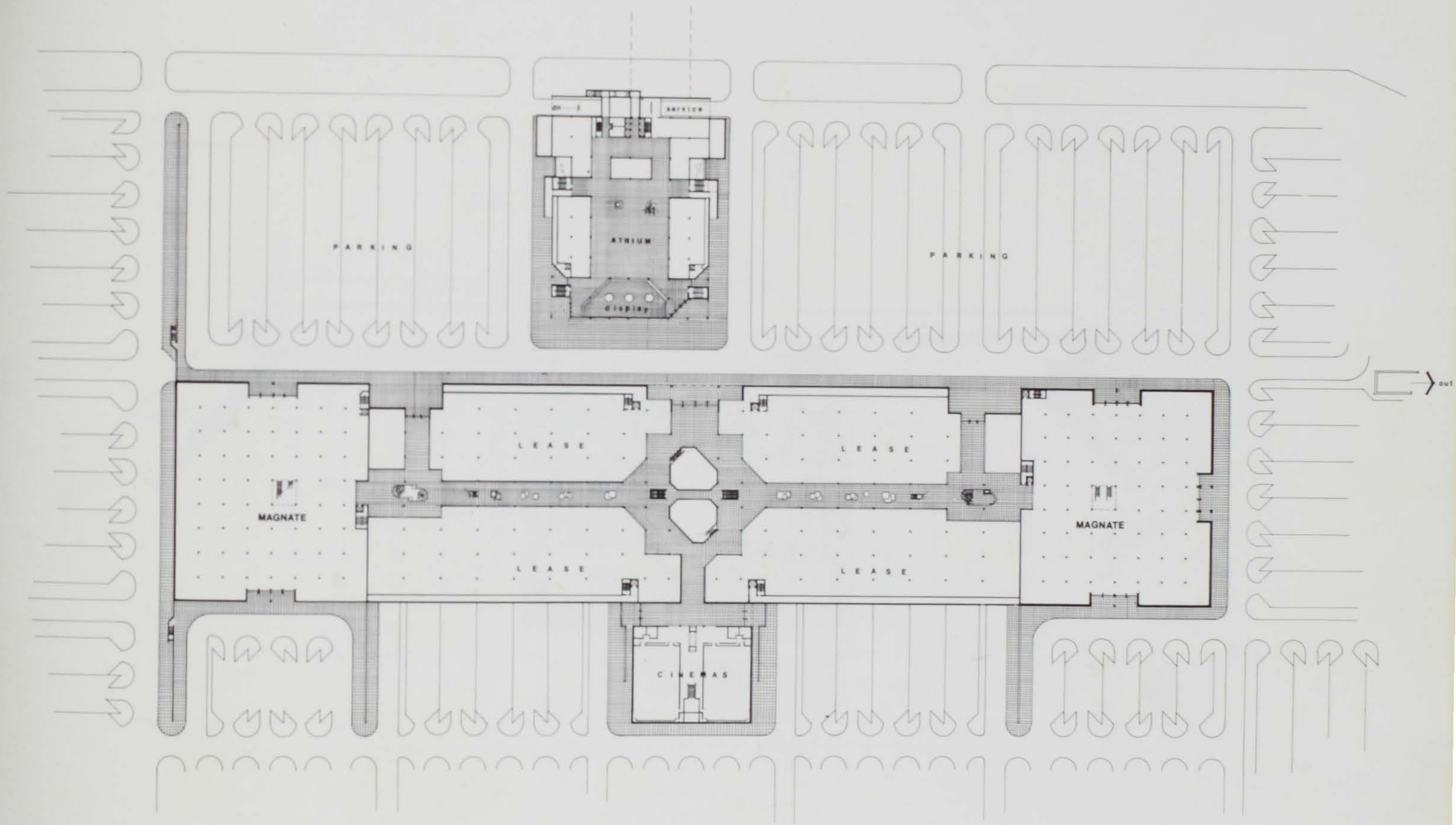
SHOPPING CENTER

0 50 100 200
25 150



VILLAGE CENTER

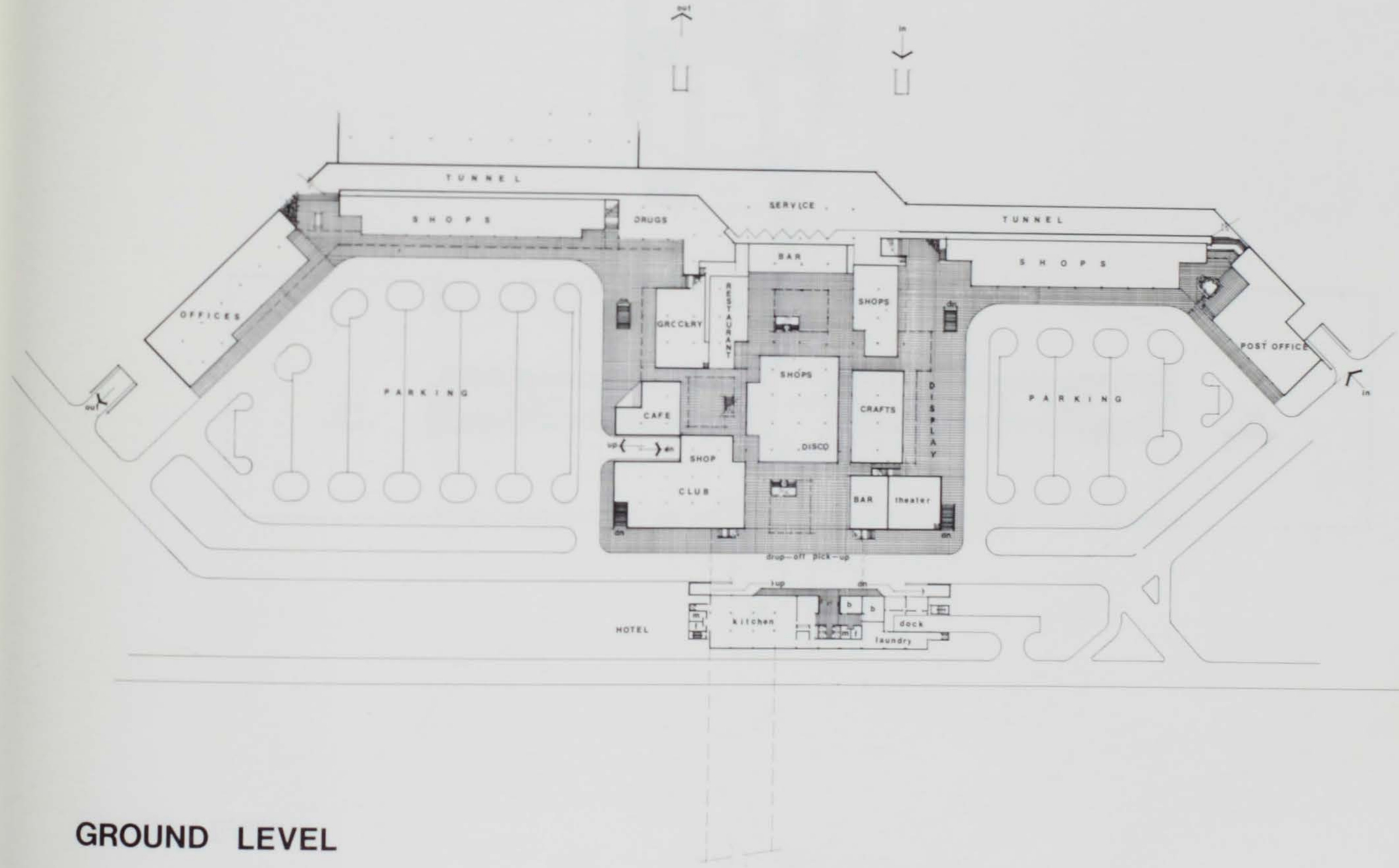
0 50 150
25 100 200



MALL LEVEL

SHOPPING CENTER

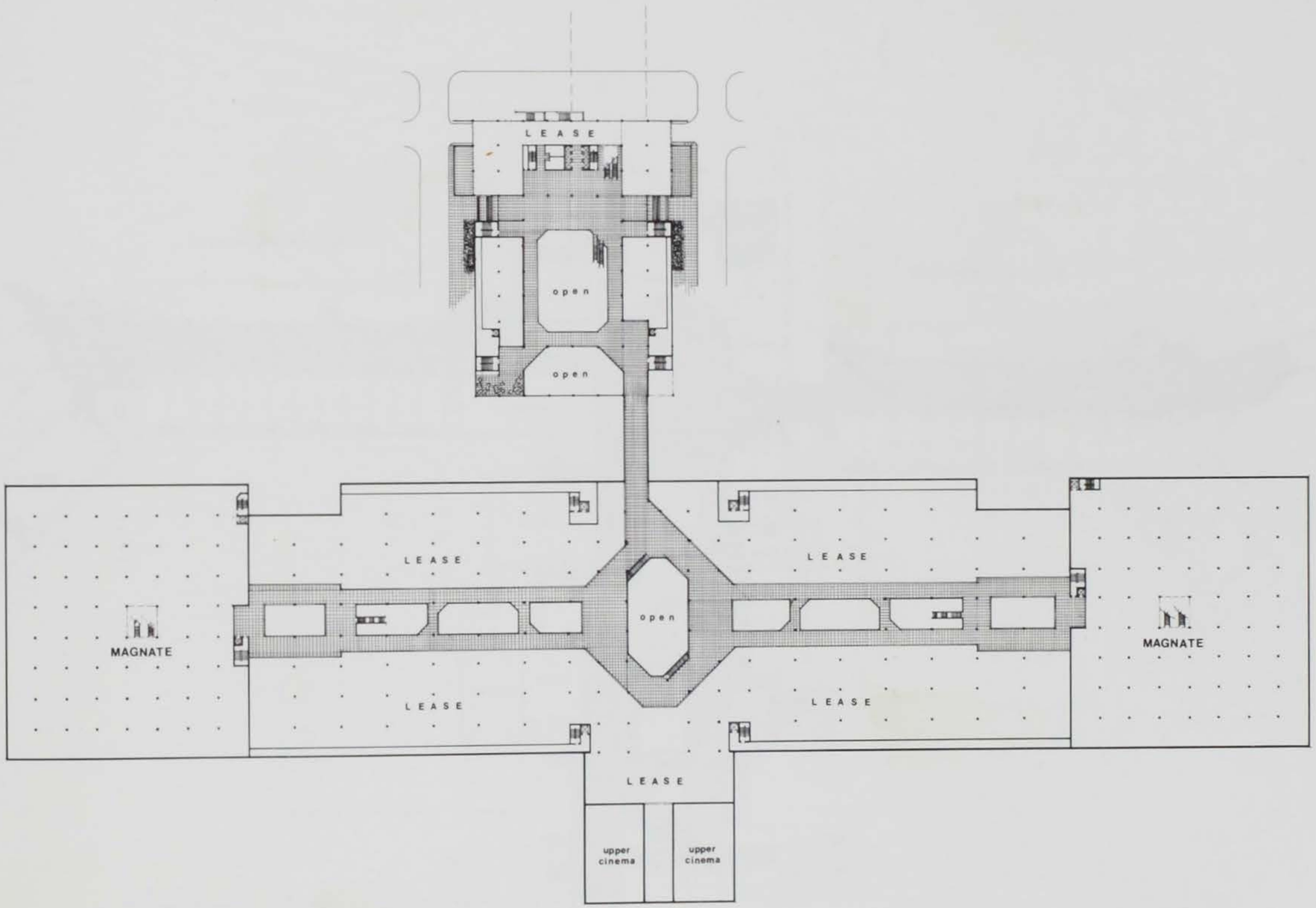
0 50 100 25 150 200



GROUND LEVEL

VILLAGE CENTER

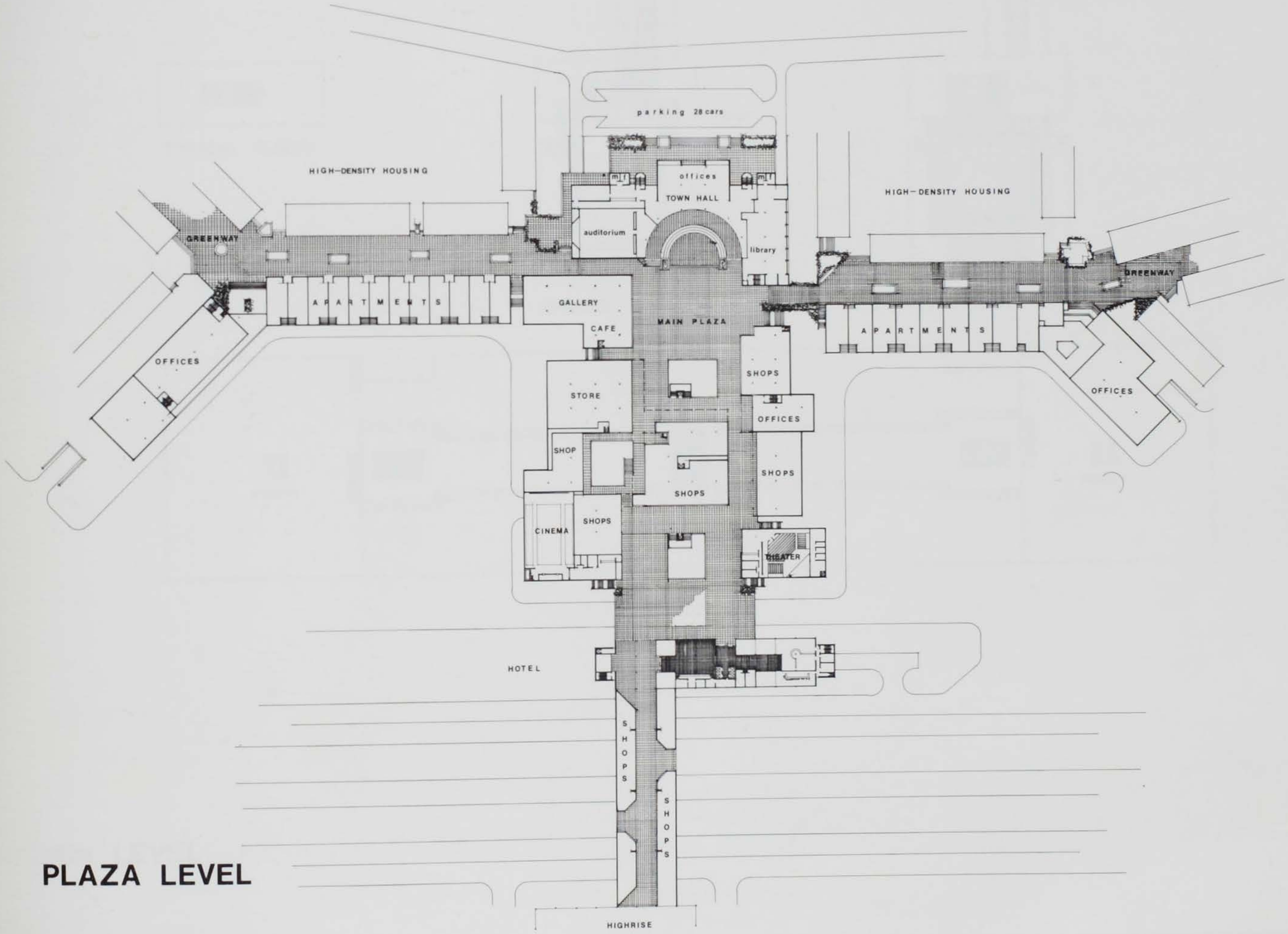
0 50 150
25 100 200



UPPER LEVEL

SHOPPING CENTER

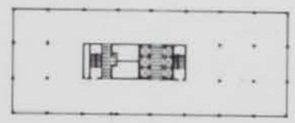
0 50 150
25 100 200



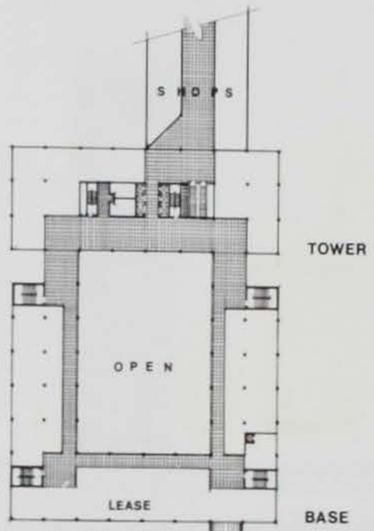
PLAZA LEVEL

VILLAGE CENTER

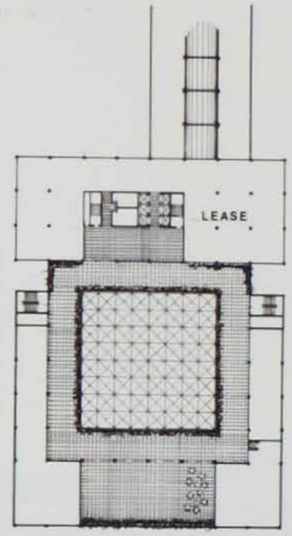
0 50 150
25 100 200



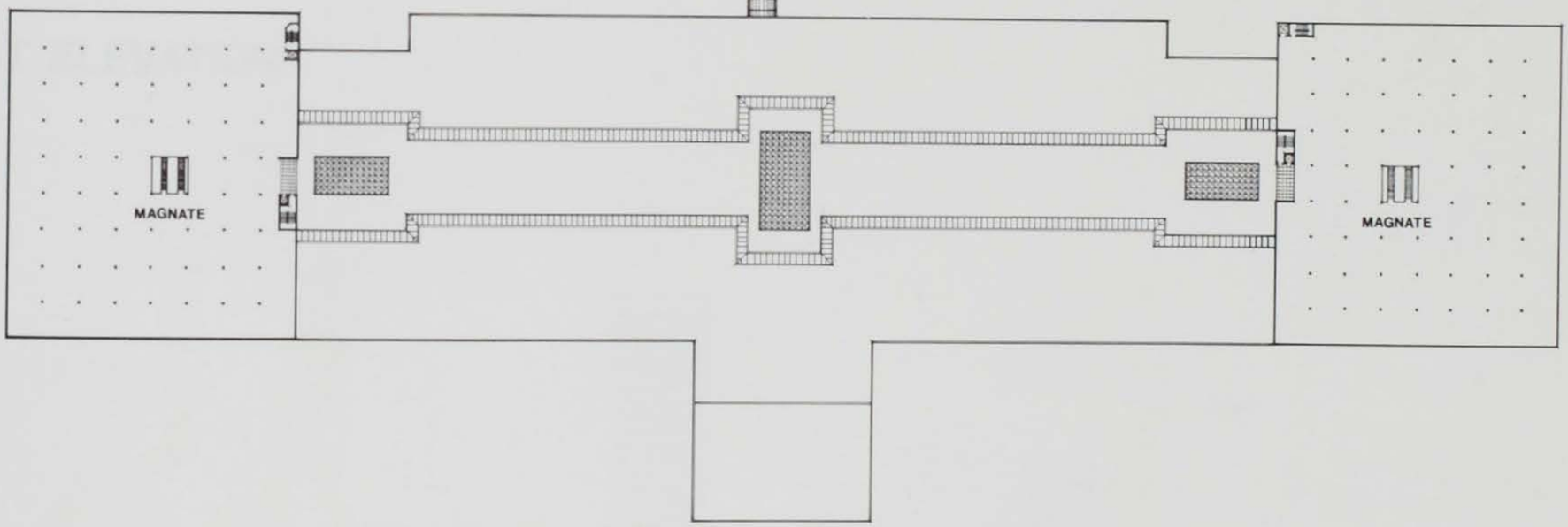
TYPICAL FLOOR



OFFICES



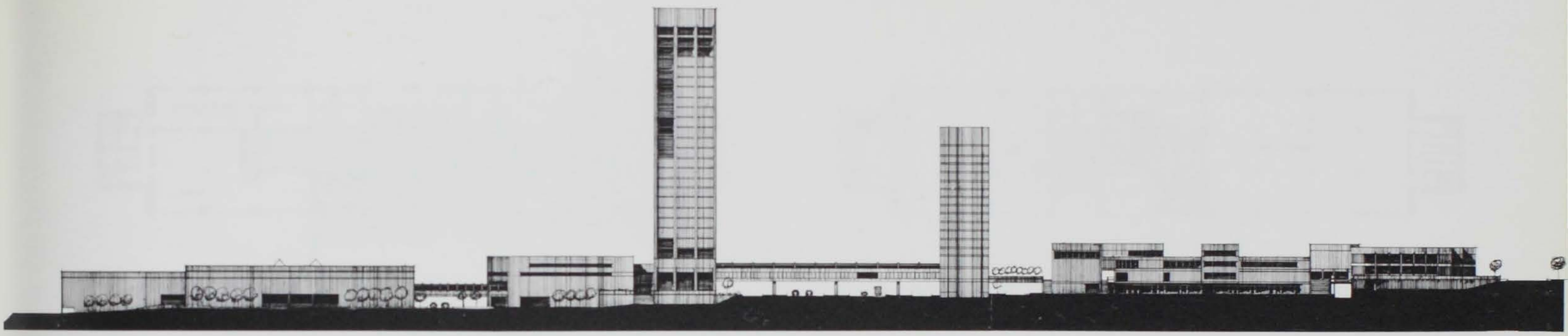
ROOFTOP



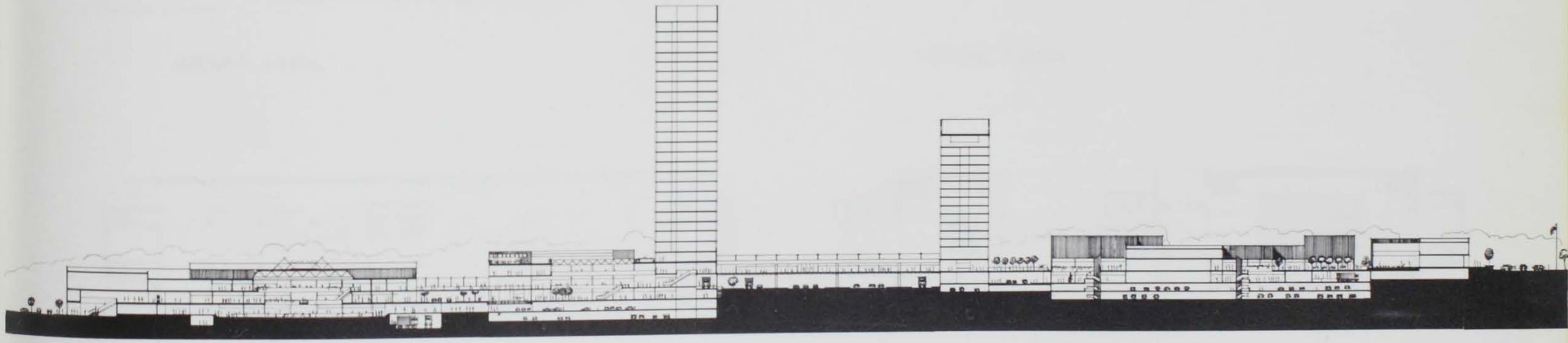
4th LEVEL

SHOPPING CENTER

0 50 100 200
25 150



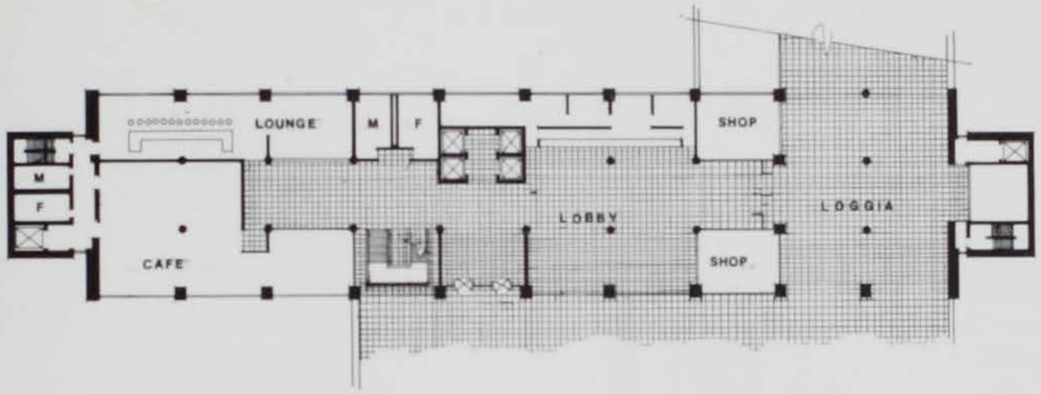
SOUTHEAST ELEVATION



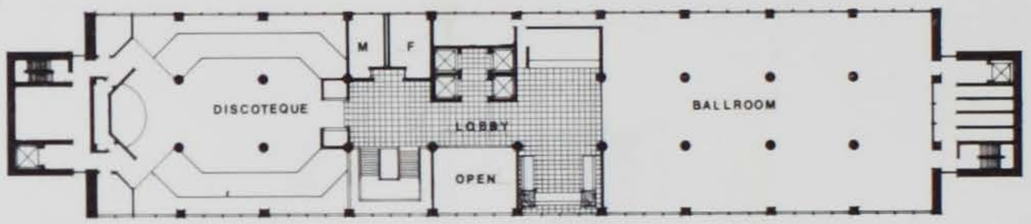
SECTION AA

COMPLEX

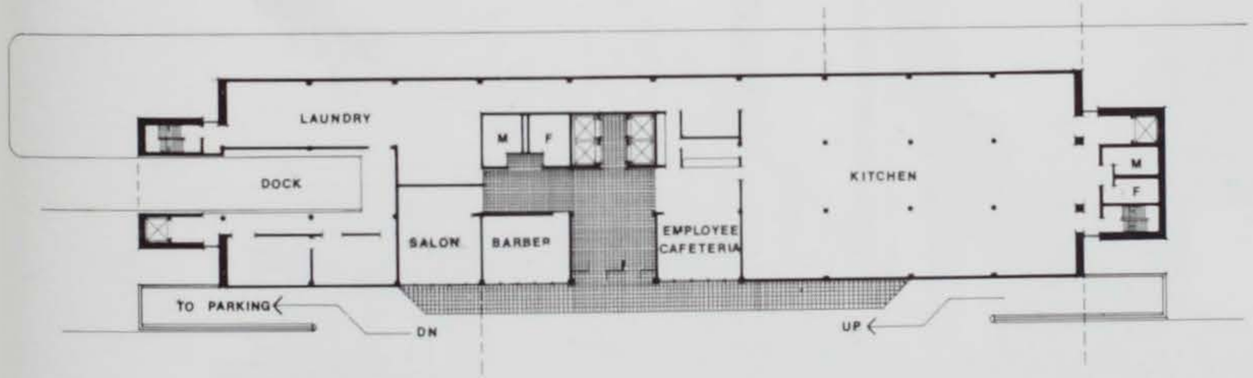
0 50 150
25 100 200



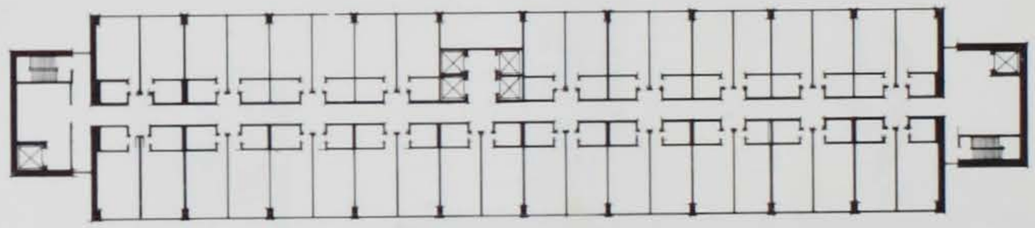
PLAZA LEVEL



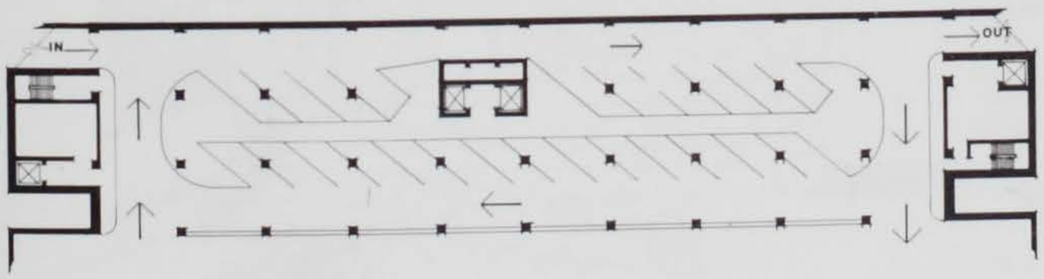
BALLROOM LEVEL



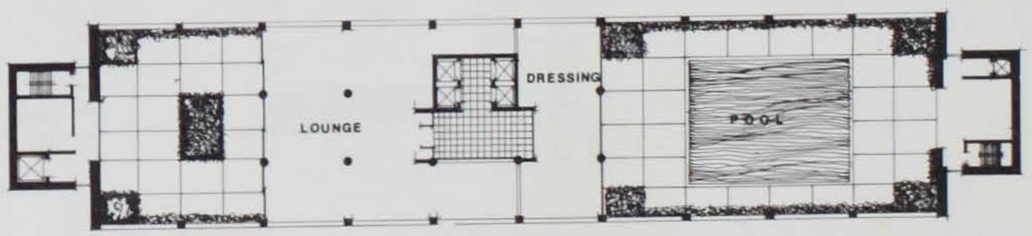
GROUND LEVEL



TYPICAL FLOOR



PARKING LEVEL



ROOFTOP LEVEL

HOTEL PLANS

0 10 40 80
5 20 60


DEDI
LOUISA

FOOTNOTES

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1. James A. Clapp, New Towns and Urban Policy: Planning Metropolitan Growth, (New York: Dunellen), p. 43.

2. Ibid.

3. Ebenezer Howard, Garden Cities of Tomorrow (3rd edition; Cambridge: MIT Press, 1965), p. 27.

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5. Clapp, op. cit., p. 45.

6. Ibid., p. 46.

7. Ibid.

8. Ibid., p. 47.

9. Galanty, p. 1.

10. Ibid.

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12. Ibid.

13. Ibid.

14. Emild Tempia, "New Town," Architecture D'Aujourd'hui-Villes Nouvelles,(Vol. 146, Oct.-Nov. 1969), p. 137.

15. Clapp, op. cit., p. 15.

16. Ibid., p. 16.

17. Ibid.

18. Ibid., p. 17.

19. Paul D. Spreiregen, The Architecture of Towns and Cities (New York: McGraw-Hill, 1965), p. 5.

20. Clapp, p. 17.

21. Ibid.

22. Ibid.

23. Frederick R. Hiorns, Town Building in History, (London: Harrap, 1956), p. 44.

24. Clapp, op. cit., p. 18.

25. Ibid., p. 20.

26. Ibid., p. 21.

27. Ibid.

28. Clarence Stein, Toward New Towns for America, (New York: Reinhold, 1957), p. 218.

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33. Ibid., p. 28.

34. Ibid., p. 33.

35. Hugh Mields, Jr., Federally Assisted New Communities: New Dimension in Urban Development, (Urban Land Institute, 1973), p. 24.

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39. Perloff and Sandberg, op. cit.

40. Galanty, op. cit., p. 5.

41. Ibid.

42. Ibid., p. 20.

43. Ibid., pp. 20-21.

44. Ibid., p. 53.

45. Clapp, op. cit., p. 53.

46. Ibid., p. 55.

47. Ibid., p. 56.

48. Ibid., p. 57.

49. Heikki von Hertzen and Paul D. Spreiregen, Building a New Town, (The MIT Press, 1971), p. 1.

50. Ibid.

51. Ibid., p. 108.

52. Waclaw Ostrowski, Contemporary Town Planning (International Federation for Housing and Planning, 1970), p. 191.

53. Ibid.

54. Federic Osborn, The New Towns (Leonard Hill, 1969), pp. 385-386.

55. Ibid.

56. Ostrowski, op. cit., p. 280.

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58. Ibid.

59. Harbison Development Corporation, Harbison, (Columbia: Marketing Department, 1975).

60. Ibid.

61. Ibid.

62. Gibberd, op. cit., p. 67.

63. Ibid.

64. Lewis Mumford, The City in History (Harcourt Brace Jovanovich, 1961), p. 148.

65. Ibid., p. 149.

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67. Ibid., p. 150.

68. Ibid.

69. Ibid., p. 149.

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